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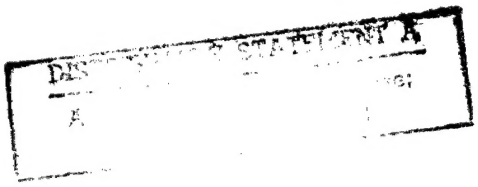
West Europe Report

SCIENCE AND TECHNOLOGY



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WEST EUROPE REPORT

SCIENCE AND TECHNOLOGY

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MICROELECTRONICS

SCIENTIFIC AND INDUSTRIAL POLICY

ADVANCED MATERIALS

SAAB LAUNCHES COMPANY TO MARKET COMPOSITES TECHNOLOGY

Helsingborg PLASTFORUM SCANDINAVIA in Swedish Nov 84 p 57

[Article by Per Rydgren]

[Text] Saab-Scania in Linkoping has launched a company which will market its aircraft division's know-how in composites engineering. The new company is called Saab Composite AB and will contract both in design and production.

Thirty percent of the airframe of the new JAS 39 Gripen military aircraft will be built with fiber composites. For that, Saab has invested large sums of money in a very advanced composites workshop. In addition, the aircraft division has a very well equipped materials laboratory for composite materials. The laboratory has good resources for [?break-even] mass production.

This past spring the Saab management decided that these resources would also be placed at the disposal of industry via a marketing company. The company was given the name Saab Composite AB, and civil engineer Bo Malmkvist, hand-picked from one of Saab's divisions, was designated director.

Bo Malmkvist took up his new position after vacation this year, and one of the first tasks was to set up the organization. This is not yet finished, but the idea is that it will comprise seven people: the director, three applications engineers, a production engineer, an economist and a secretary. All production and specialist services will be purchased from the parent company's aircraft division.

Saab Composite will work primarily with products to be produced in large series. The automobile industry is a definite market area. "In the passenger car area it may be hard work finding openings for fiber composites, but where trucks are concerned there are many 'meaty' details to ponder," says Bo Malmkvist. Here there are universal drive shafts, pressurized containers, springs and much more.

The company has inherited a number of external customers who were already with Saab's aircraft division. One application considered to be of special interest is medical products. Bo Malmkvist is a specialist in this because of his training and previous work in other companies.

Saab Composite becomes the second plastics company in the Saab firm. The first is part of the passenger car division (in Kristinehamn) and produces [comfort products], spoilers and polyurethane bumpers.

CSO: 3698/291

AEROSPACE

FINLAND TO SEEK ASSOCIATE MEMBERSHIP IN ESA

Helsinki HELSINGIN SANOMAT in Finnish 1 Feb 85 p 23

[Article by Jyri Raivio: "Finland Into the Space Agency: European Space Agency to Consider the Membership Application at the End of the Month"]

[Text] Finland is the last developed, industrial European nation seeking involvement in the very quickly developing space research by applying for membership in ESA [European Space Agency]. Finland has officially presented negotiations for associate membership in the agency, whose board is to take a stand on the motion at the end of the month.

If ESA's board responds positively to Finland's endeavors, the parties involved will begin negotiation of the membership stipulations. On Finland's part, the negotiations will be run by the Ministry of Foreign Affairs and the final decision about joining will be made by the parliament.

According to the Foreign Ministry's space-man, assistant department-head Holger Rotkirch, Finland's industry, run by the most advanced technologies, has only now developed far enough to seek membership in the advanced-technology space agency. In addition to industry, universities and researchers have also showed strong interest in membership.

Neither Finland's industry nor the researchers could keep up with space research by themselves. The industry is in addition especially interested in the ESA's principle that lets only agency members to get orders, in proportion to their contribution.

Exotic Possibilities

ESA-membership opens new, exotic space possibilities for Finland. The newest, so far not fully formulated one, is joining the United States' aerospace administration's, NASA's, Columbus space-station venture. On Thursday at the ministry meeting in Rome, ESA made the decision to join Columbus.

According to Rotkirch, the Finns at least at this point are most interested in those of ESA's future plans that deal with long-distance charting and the development of information exchange technologies. However, Finland is already as an affilitate member involved in the ESA-founded EUMETSAT weather-satellite and the EUTELSAT information-exchange satellite, which the ESA

has recently left under the care of their own separate organizations.

On the other hand, according to Rotkirch, the development of the Ariane carrier-rocket, also approved by the ESA ministers on Thursday, does not interest the Finns.

Associate membership is only the first step in Finland's journey to full ESA membership. According to Rotkirch, the approximately 5-year long associate membership is necessary in order for the industry to adapt to the requirements of advanced technology business with the ESA. Norway, for example, is currently undergoing a similiar transitional period.

The price of Finland's membership will be determined by the negotiations. Rotkirch, however, estimates 2 million dollars per year for just the membership fee. In addition to this, the money for different projects has to be raised separately, but will be returned in the form of industry orders.

Up to now, ESA has followed principles according to which member countries taking part in different ventures will receive 80 percent of their fees back as orders. The percentage will, however, be raised to a full hundred, according to Rotkirch.

11 Full Members in the ESA

11 countries are full members in the ESA. France and West Germany pay for almost half of this year's budget which has risen to over 5 billion marks. Italy's and England's combined share is about 25 percent.

In addition to full members, the agency has two associate members at this point, Austria and Norway. In addition ESA has a mutual cooperation agreement with Canada. Of the Scandinavian countries, Sweden and Denmark are full members of the ESA.

ESA's 1,360-head staff keeps the wheels turning for quite a multifaceted space research program. The agency's headquarters are in Paris. In addition it operates in Holland, West Germany and Italy. The launch-pad of the Ariane-rocket, ESA's flag-ship, is in Couros in French Guyana.

Columbus and New Rocket Approved

During their two-day conference in Rome, ending on Thursday, the ministers of the ESA countries made a basic decision about two of the major projects for the next two years. ESA is involved with NASA's Columbus space-station and will develop its new, own carrier-rocket Ariane 5. The cost of both projects for the ESA is estimated at over 2 billion dollars, or over 13 billion marks.

Finland, which is seeking associate membership, tried to become a

spectator in this meeting, so important in terms of the agency's activity over the next 10-15 years. However, neither Finland nor any other spectator outside of the ESA were admitted.

Ronald Reagan, president of the United States, called for European participation in the Columbus project last year. The Columbus is intended to be launched at the beginning of the next decade onto its orbit around the earth. The total cost of the space-station has been estimated at 10 billion dollars, of which about a fifth, thus, would be paid by the Europeans. However, the details of the cooperation and of the division of costs have still to be determined through what is expected to be fierce negotiations.

12688
CSO: 3698/245

BIOTECHNOLOGY

FRENCH BIOTECH BOOSTED BY NEW COMPANY ACQUISITIONS

Paris AFP SCIENCES in French 22 Nov 84 p 77

[Article: Sanofi Takes Over Rousselot and Stakes On Biotechnologies"]

[Text] Paris—SANOFI [Aquitaine Financial Corporation for Hygiene and Health], the pharmaceutical subsidiary of Elf-Aquitaine, announced on 15 November that it was going to take over the Rousselot chemical company, another subsidiary of Elf-Aquitaine, to win its gamble on biotechnologies.

The boards of SANOFI and Rousselot met on 14-15 November and approved the "principle" of this take over that should take place during the first quarter of 1985, two SANOFI shares being exchanged for one Rousselot share.

SANOFI will thus more than double its sales of "live biology" products--from FF 2 billion to FF 4.4 billion. SANOFI, 59 percent of whose stock is held by Elf, was already the second French pharmaceutical group, with expected 1984 sales of FF 11 billion (about 15 percent more than in 1983) and an expected profit (before taxes) of FF 391 million (+17 percent).

Rousselot, the leading world producer of gelatin and the leading European producer of animal gelatins, in which Elf also holds a 67-percent interest, increased its sales to FF 2.7 billion in 1983, with a profit of FF 45 million.

During the last few years, the two companies stepped up their efforts abroad where they both achieved about half their sales.

By taking over Rousselot, SANOFI thus achieves a size commensurate with its ambitions in the sector of biotechnologies: "We have now mastered this technology, but we do not have the position we could have," Rene Sautier, SANOFI chief executive officer, stated recently.

In addition, the company is still considering the acquisition of foreign firms, as it intends to continue its efforts in this field to maximize the benefits derived from it by its products in various sectors (pharmaceuticals, perfumes and cosmetics).

9294
CSO: 3698/251

CIVIL AVIATION

BRIEFS

KLM TO ORDER FOKKER 100'S--Amsterdam, February 7--KLM Royal Dutch Airlines said today it plans to replace part of its ageing fleet of McDonnell Douglas DC-9 aircraft with Dutch-built Fokker 100s. The airline said it would make a final decision on an order after talks with Fokker in the next few months. It said that in the period 1987/88 it would replace its fleet of 19 108-seat DC-9s with 100-seater and 150-seater aircraft. The Fokker 100 falls within the first category. KLM did not specify how many F100s it will order. It said a decision on 150-seater aircraft would be taken later. The Fokker 100 is a two-engine jetliner for short and medium-haul flights which was developed from the Fokker 28. [Text] [The Hague ANP NEWS BULLETIN in English 8 Feb 85 p 4]

FOKKER WINS SECOND F-50 ORDER--Amsterdam, February 13--The Fokker aircraft company today announced that the West German domestic airline Deutsche Luftverkehrsgesellschaft MBH (DLT) has ordered six new Fokker 50 propjet passenger aircraft, and has taken an option on a further six. It is the second announcement of an order for Fokker's new aircraft in two days. The total contract value of the DLT order will be 300 million German marks (91 million dollars) if all options are converted into firm orders, Fokker said. The first Fokker 50 customer was Ansett of Australia. Fokker yesterday announced an order from Ansett for ten of the new 50-seat aircraft and options on a further five. This order was worth 340 million guilders, Fokker said. Ansett will take delivery of the first F-50 in December 1986, Fokker said today. This is a month earlier than announced last night. DLT's first F-50 will be delivered in February 1987. Two more will be handed over that year, and the remaining three in 1988. [Text] [The Hague ANP NEWS BULLETIN in English 14 Feb 85 p 1]

THOMSON EQUIPS A 320--Thomson-CSF will supply the EIS (Electronic Instrument System) visual display for the Airbus A 320 instrument panel as well as signalling systems for the ailerons and elevator. After the Airbus A 310 and A 300/600, the A 320 will be the third Airbus family aircraft to be equipped with Thomson-CSF visual displays. [Text] [Paris LA LETTRE THOMSON in French 24 Dec 84 p 2] 9294

CSO: 3698/278

COMPUTERS

U.S. MARKET CRUCIAL TO ERICSSON'S STRATEGY

Stockholm DAGENS NYHETER in Swedish 24, 25 Feb 85

[Commentary by Sven-Ivan Sundqvist]

[24 Feb 85 p 10]

> [Text] DAGENS NYHETER's market analyst Sven-Ivan Sundqvist has visited Ericsson's larger plants in the United States--headquarters in Greenwich outside New York, the information systems division in Garden Grove, California, near Los Angeles, and AXE headquarters in Richardson, Texas, north of Dallas. His impressions are presented in the following series of articles.

The United States, which is the world's largest telecommunications and computer market, is becoming more and more important to LM Ericsson. Over 40 percent of Ericsson's stock is owned by foreigners, of which 30 percent are Americans. Ericsson is expected to gross about $520 million in 1985 in the United States. This corresponds to about 13 percent of the group's business volume. Italy, Mexico, and the United States are now Ericsson's largest foreign markets.

But the challenges in the United States are great. So far, the company has lost about 1.5 billion kronor in the United States. It will be several years before stockholders know whether or not Ericsson will succeed in the United States.

The United States is the world's largest market for both teleeommunications and information technology. The American market for information processing is about $250 billion annually, a staggering 2 trillion kronor. (Sweden's GNP is under 1 trillion kronor.)

Thus, Ericsson's deeper and deeper involvement in the United States is just as much an investment in American technology and know-how as an investment in marketing in the United States. Now, in early 1985, LM Ericsson has gone as far as it can to distinguish its United States strategy. Its main activities can be described and stockholders can begin to relate signed--and unsigned--contracts to the company's ambitions. If Ericsson succeeds in the United

States, which has the toughest competitive climate in the world, then Ericsson can leave the eighties with its head held high.

If Ericsson fails, then its approximately 70,000 stockholders can expect the value of Ericsson stock to drop additionally. Big money is being invested in the United States.

The campaign in the United States began in earnest in 1980 when Ericsson and the United States company Atlantic Richfield (Arco) formed a jointly owned company (50-50). This process was facilitated by the fact that Arco board chairman Robert Andersen, who is of Swedish descent, and Marcus Wallenberg had known each other for many years.

The company was called Anaconda-Ericsson Inc (today it is called Ericsson Inc). It had a capital stock of $210 million, which has now been increased to $370 million. Atlantic Richfield chipped in its American and Ericsson its Latin American cable factories. In addition, Anaconda had connections with the data and telecommunications industry by way of Anaconda's production of small telephone exchanges for businesses. It was not specifically stated in 1980, but the goal was to use Anaconda-Ericsson as a base and platform to enter the American telecommunications and office equipment markets.

Losses

The hope was that cable production would provide profits that would be reinvested on the "communications" side, primarily in larger office exchanges. No one seriously believed in 1980 that Ericsson would enter the American telephone market with its AXE system.

But the following years did not go according to plan. Because of the economic slump, the cable production suffered serious losses. In addition, the decision to market AXE in the United States came far too late. For these reasons, the partners were forced to increase their capital--so far by 80 million each.

In 1983 it was decided that vice-president Hakan Ledin, executive vice-president Bjorn Svedberg's closest associate in Stockholm, would move to the United States and personally supervise the United States effort, while maintaining responsibility for EIS (Ericsson Information Systems). It was then that the name of the company in the United States was changed from Anaconda-Ericsson to Ericsson Inc.

LM Ericsson's third-quarter report in November 1984 came as a shock to shareholders. The third quarter had shown a loss. The reasons given were delays in development projects, component shortages, disruptions in production, and "insufficient sales in the United States."

Run Wild

Growth in the area of information systems (EIS) had been too rapid and too uncontrolled. It could be said that it had "run wild." In a far-reaching reorganization, Stig Larsson became the top EIS chief in Stockholm and

Hakan Ledin had "local" responsibility in the United States. The wording "insufficient sales in the United States" in the quarterly report irritated several key figures in Ericsson Inc. They thought this implied that the United States market had been misjudged. Actually, they claimed, the problem had been difficulties and delays in shipments from Sweden.

Ericsson Inc now has about 2,500 employees in the United States. In terms of business volume, Ericsson holds third place among Swedish companies in the United States. Volvo is first with $3 billion and Electrolux is second with $1 billion.

The table below shows Ericsson's various divisions in the United States and DAGENS NYHETER's estimates for volume in the various divisions for 1984 and 1985. Today's article deals with all areas of activity in the United States except those in Richardson, Texas, i.e. the AXE system and transmission equipment. These will be described in an article tomorrow.

1. Cable

Originally, Ericsson-Anaconda's main activity was cable sales, approximately equally divided between telecommunications cable and power cable. In 1984, however, Ericsson Inc started selling off its power cable units in the United States in order to concentrate on telecommunications cable. There are two types of telephone cable--copper and glass fiber. Fiber cable (so-called Lightwave Cable) is the most expansive market. Ericsson Inc purchases most of its glass fiber from the American company Corning Glass and uses it to produce glass fiber cable. Corning Glass has a patent on the glass fiber. This patent will expire in the late eighties.

So far, Ericsson Inc has sold glass fiber cable to several "independent" telephone companies, including GTE/Sprint, United Telecom, and Microtel. As indicated by the table, the glass fiber cable market is expanding rapidly. By 1986 or 1987, it could even surpass copper cable in dollar value.

Declining

Traditional telecommunications cable is made of copper. Competition for copper cable sales in the United States is intense. There are about a dozen competitors. In 1984 Ericsson Inc received copper cable orders from six of the seven AT&T companies. The copper cable plants are operating around the clock, according to Walter Plate, who runs the cable activities from Greenwich, Connecticut.

"On the whole, the copper cable market in the United States is decling," Plate said. "But because of numerous orders in 1984 from the so-called regional Bell companies, cable production within Ericsson Inc is now expanding rapidly."

The AT&T subsidiary AT&T Technologies, formerly Western Electric, has about 60 percent of the United States market for copper cable, but only 30 percent of the glass fiber cable market. In the area of copper cable, Northern

Telecom is second largest (about 20 percent) and in the area of glass fiber cable Siecor (a joint venture between Siemens and Corning Glass) is second largest with 25 to 30 percent.

In 1984 about $40 million in book value was written off in the cable sector. Plate believes that in 1985 Ericsson Inc will break even in its cable activities in the United States (after interest costs).

2. Business exchanges. The MD 110 business telephone exchange is used for businesses that need between 1,000 and 10,000 extensions. The MD 110 is the heart of Ericsson's computerized office system. Both speech and data are distributed by the MD 110.

So far, only two MD 110 exchanges have been put into operation in the United States: one at Wells Fargo Bank in Chicago and one at the University of Santa Cruz in California. There are plans to install MD 110 facilities in 1985 and 1986 at Arco, the United Nations, Polaroid, Price Waterhouse, the Bank of Ohio, and Chicago Eastern Railroad.

According to certain LM Ericsson engineers, the MD 110 system has not received the same development resources over the years as the AXE system, presumably because expansion in the area of office exchanges was underestimated.

"From a design standpoint, the MD 110 is 5 years ahead of its competitors, but it is 2 years behind in terms of the various services it offers the customer," said sales chief William Sparks of Garden Grove.

Sparks seems to be dissatisfied with relations between him and his bosses in Stockholm. He believes that the legwork in Stockholm is too slow, but believes that it should be easy to catch up. Others have told DAGENS NYHETER that the MD 110 has far too many "childhood diseases."

600 Banks

Around the world, however, Ericsson has received orders for MD 110 exchanges with a total of 600,000 extensions, 150,000 of which are now in operation. In 1984 Ericsson Inc received MD 110 orders for about 40,000 extensions, to be delivered primarily in 1985.

The goal for new orders in 1985 is about 50,000 extensions.

"Our sales goals for the MD 110 include about 600 banks, 100 insurance companies, and about 100 universities," Sparks said. "In addition, we are taking a look at Fortune's list of the 500 largest industrial companies."

The MD 110 is sold in the United States through two channels. One is Ericsson Inc and the other is the data and control company Honeywell, which calls its MD 110 the Deltaplex 2000.

Honeywell has a division that takes care of all control and communications

equipment in an office building during the construction phase.

It is in cases of this type that Honeywell includes the Deltaplex 2000 in its bids. In 1984 Honeywell received Deltaplex 2000 orders totaling about 30,000 extensions.

AT&T (whose office exchange is called System 85) and Northern Telecom (SL 1) each have about 25 to 30 percent of the American office exchange market, which totals about $1.5 billion and about 1.5 million extensions, i.e. $1,000 per extension in round numbers.

In third and fourth place are IBM's newly acquired subsidiary Rolm and the Canadian company Mitel, each with 11 percent of the market, and in fifth place is the Japanese company NEC with 8 percent. There also are about a dozen other companies that are trying to enter the market.

Ericsson Inc and Honeywell have a joint development company (200 engineers) to adapt the MD 110 to United States standards.

Sales Off

3. Mobile telephones. LM Ericsson had its greatest initial success in the United States in this area. During the past 6 months, however, sales have been off because of the unsettled situation on the consumer side. A large number of companies are seeking concessions to operate automobile telephone systems in various cities.

Compared to the situation in the Nordic countries, mobile telephony in the United States is underdeveloped. But mobile telephony in the United States is advancing by leaps and bounds. Ericsson Inc does not sell automobile telephones in the United States, but concentrates on AXE exchanges, transmission equipment, and networks. So far, contracts have been signed in Buffalo, Chicago, Detroit, and Toledo.

At present, bidding is underway in Philadelphia, Dallas, Miami, and Pittsburgh.

To date, AT&T has sold 26 mobile telephone systems, Motorola 22, Northern Telecom 5, and Ericsson 4.

No Success

4. Terminal systems, etc. This involves two main products: the Alfaskop 41 computer terminal and the E 2100 bank terminal. Ericsson has sold over 200,000 Alfaskop terminals around the world, but so far these two products have been unsuccessful in the United States.

The E 2100 bank terminal from the old Data-Saab system has run into difficulties. Here, there are no smoothly operating reference facilities, even in Europe. SE-Banken, which purchased the E 2100, has had major problems and SHB (Svenska Handelsbanken), whose board chairman Jan Wallander is on the

LM Ericsson board, purchased Nixdorf terminals. The Postal Service purchased Philips and E 2100's for SAS have been delayed.

Could Be Chimera

5. Personal computers. In the fall of 1984 Ericsson Inc began selling personal computers. In 1984 the company sold 1,340 personal computers, which would mean a sales rate of about 15,000 units for the entire year of 1985.

If this occurred, then the United States would become Ericsson's largest individual market for personal computers. In the United States, Ericsson uses 16 specialized computer companies (so-called industry representatives) that sell to about 150 retailers. These, in turn, operate about 500 stores that carry a number of different computer brands.

The initial success in the fall of 1984 could be a chimera, however, since the specialized "industry representatives" pursuaded the retailers to place firm orders. If they are unable to resell these computers to the retailers, there will be no "follow-up orders." It is likely that Ericsson Inc sold its personal computers on "firm offers" by offering extremely favorable financing.

On the other hand, 15,000 Ericsson computers represent a drop in the bucket. Four million personal computers will be sold in the United States this year. There are about 60 competing brands, so it will not be easy for Ericsson Inc.

"We will succeed," Bo Linnell said confidently. Linnell is responsible for putting Ericsson's personal computer out on the world's largest but most difficult personal computer market.

6. Ericsson Network Projects (ENP). This is the Benjamin of the Ericsson divisions. ENP produces made-to-order network facilities on a turnkey basis and is now undergoing an expansion. The division hopes to specialize in networks that use glass fiber cable.

So much for today's menu. Tomorrow we will return with the large and exciting AXE venture in Richardson, Texas.

[25 Feb 85 p 10]

> [Text] The AXE campaign in the United States is a great adventure for LM Ericsson. Ericsson Inc is now spending several hundred million each year to adapt the AXE to United States standards. Ericsson Inc expects to receive orders in 1985 from one of the seven regional companies in the United States. If no such order is forthcoming, some of the top leaders of LM Ericsson will be held accountable.

The breakup of AT&T's telecommunications monopoly in the United States began in 1984. AT&T was divided into eight companies: the seven regional "operating companies" for local traffic, or the so-called RBOC's, Regional Bell Operating Companies, which consist, in turn, of 22 operating companies, so-called Bell Operating Companies, in addition to the old parent company AT&T.

AT&T was left in charge of long-distance traffic, the manufacturing company Western Electric which was renamed AT&T Technologies, and the research division Bell Laboratories. In addition, the parent company AT&T was permitted to form another company, AT&T Information Systems, with the right to enter the computer and information market.

Breakthrough

This expected breakup of AT&T, which opened the American telecommunications market to serious competition, was a prerequisite for Ericsson's AXE campaign in the United States. Both markets and objectives in the United States were expanded.

For the past year, Ericsson Inc has been working on the seven regional operating companies (RBOC's). Personal visits have been made to all of them. If Ericsson Inc manages to sell its AXE exchanges to some of these seven companies without giving excessive discounts, it will be a success in the United States.

In October 1984 Ericsson opened a technical center in Richardson, Texas, near Dallas. The center has almost 200 development and service engineers who will adapt the AXE system to United States requirements and service future AXE facilities.

"The day we receive an AXE order from one of the seven regional Bell companies, the stock market should react. That will be our breakthrough," said AXE chief in Richardson, Kjell Sorme.

The main task of most workers at Ericsson Inc in Richardson is to adapt the AXE exchange to existing standards in the United States. About 200 engineers are working hard to produce the so-called "software." This work is divided into about 50 "partial programs" and is proceeding according to plan, according to development chief Gunnar Eriksson.

"We will need all of 1985, i.e. about 200 man-years, to make this adjustment," Gunnar Eriksson said, "but even now I am promising our AXE salesmen that we will complete the technical aspect of this work. If I were to use a comparison from the automobile industry, I would say that we have the engine and transmission ready and only the trim, polishing, and conversion of the speedometer from kilometers to miles remain."

Some might consider selling the AXE system in the United States a superhuman task.

One Foot In

DAGENS NYHETER presented the argument to Hakan Ledin, Ericsson's top man in the United States, that there must be some kind of AT&T loyalty among the seven regional companies and, secondly, AT&T Technologies' (formerly Western Electric) competitor to the AXE exchange (called NO5 ESS) could be more

advanced than the AXE. After all, the United States is the heartland of the electronics industry.

Hakan Ledin does not share that opinion. He believes that the purchasers for the seven regional companies are independent. Other observers in the United States point out that the purchasing agents for the regional companies were previously "oppressed" by AT&T and, for this reason, they would love to show their independence.

"We could point out, for example, that six of the seven regional companies already purchase telecommunications cable from us," cable boss Walter Plate said. "Thus, we already have one foot in the door."

When it comes to the telephone exchanges produced by AT&T Technologies, Ericsson engineers believe that the digital AXE exchanges are actually more highly computerized and, therefore, superior to those of AT&T Technologies. But it is difficult for a layman to evaluate such statements. All competitors say that they are best. But Ericsson's main argument is convincing: over 50 countries have chosen the AXE system as their standard.

Third Place

Financial analysts in New York have told DAGENS NYHETER that Ericsson cannot hope to compete with the Canadian company Northern Telecom, number two in the exchange market of the United States. They believe that Ericsson must be content to be the "number three producer" after AT&T Technologies and Northern Telecom. So far, Ericsson has sold three AXE stations in the United States to so-called independent operating companies, i.e. to non-Bell companies and two AXE exchanges for mobile telephones.

Ericsson Inc says that no European competitor has yet made a major investment in the exchange market in the United States. Neither ITT, Siemens, NEC of Japan, nor the French company CIT-Alcatel now have a development center in the United States as large as that of Ericsson Inc in Richardson. But several companies hope to be the "third manufacturer." These include GTE, Digital Switch, NEC, ITT, Siemens, Plessey, CIT-Alcatel, and others.

The demand for telephone exchanges in the United States is estimated at 7 million local lines and 2 million long-distance lines each year. If Ericsson Inc can capture 10 percent of the local market, it would provide a volume of 700,000 lines at about $250 per line, i.e. about $175 million or just over 1.5 billion kronor.

Marginal?

In 1984 Ericsson's total volume in public telephone exchanges was 10 billion kronor. On the other hand, production capacity of the two North American producers is reported to be 50 percent above expected demand. Under these circumstances, no one could expect to make much money on telephone exchanges. But Ericsson has established the AXE system all over the world, so that it may

see sales in the United States as marginal, making it easier to achieve profitability than for its competitors.

AXE sales in the United States are of great significance to Ericsson because future international expansion of the AXE system may be hindered by the extreme success during 1980 to 1984, which saturated many markets, and by the fact that four of the world's largest telecommunications services are "closed" to LM Ericsson, namely Japan, the Soviet Union, West Germany, and France.

But the seven regional companies and the "old" AT&T are not the only potential customers for Ericsson Inc. The so-called "independent operating companies" in the United States are also of great interest. This includes both long-distance and local facilities.

There are some indications that extremely interesting negotiations for local exchanges are now underway with the independent operating company United Telecommunications. Ericsson has submitted a bid for 20 local AXE exchanges.

Cable Largest

"It should be noted," said Kjell Sorme, "that the seven RBOC companies have a jointly owned 'appraisal company' called Bell Communications Research or Bellcore. Bellcore's task is to evaluate various exchange systems. The fact that Bellcore decided in 1984 to analyze and grade the AXE system is a major step forward."

"We are looking forward to the end of the first half of this year when the results will be published. AXE is the first foreign system to be analyzed."

But development of the AXE exchange is not the only activity in Richardson. Transmission equipment is also sold there. Ericsson Inc expects to sell transmission equipment for about $120 million in 1985.

These products form the hardware that is needed to "bundle" several telephone conversations together in a single signal and then amplify the signals repeatedly between telephone exchanges.

In 1985 transmission equipment is the second largest individual line of products Ericsson Inc has in the United States. Cable is the largest. AT&T Technologies and Northern Telecom, together, have over 50 percent of the market.

For the Ericsson group, transmission equipment is a much more important product in the United States than outside the United States. Almost half of the Ericsson group's total sales of transmission equipment occurs in the United States. The transmission market in the United States, as a whole, is about as large as the exchange market: about $5 billion to $ 6 billion each.

This "distorted distribution" in the United States, compared to other countries, results from the fact that telephone networks are more complex in the United

States. The "services" that are offered are more numerous and more complex (data services, for example) which places much greater demands on transmission equipment.

This is the second article in this DAGENS NYHETER series on LM Ericsson in the United States. The first article was published on Sunday, 24 February.

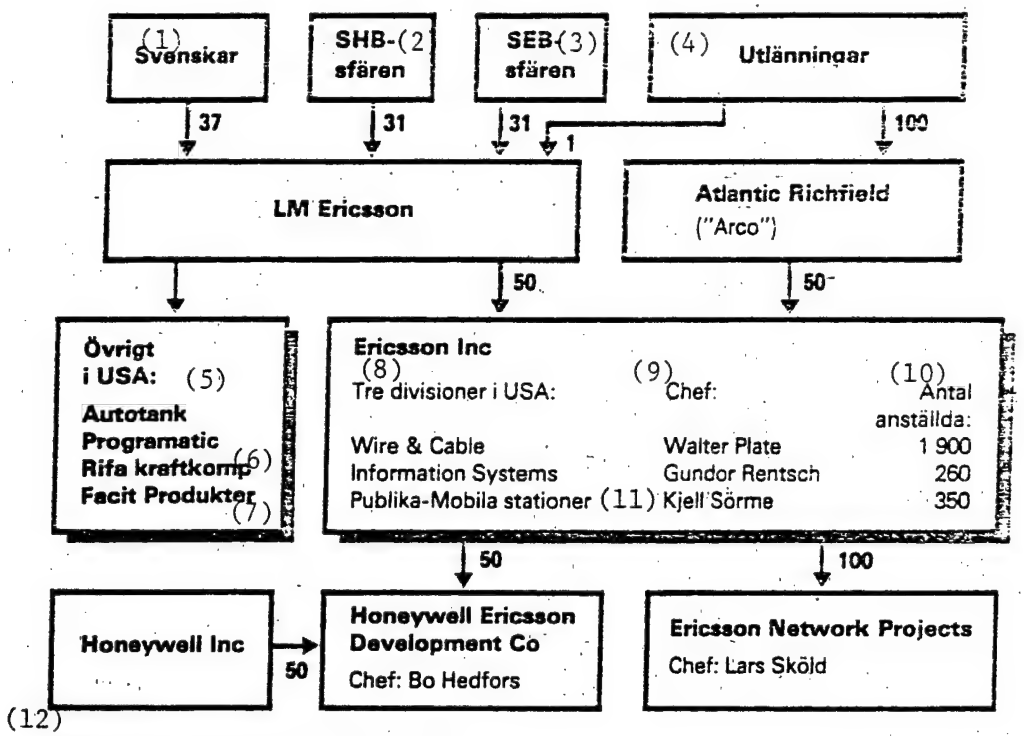
SALES (millions of dollars)

DAGENS NYHETER estimates (9 kronor/dollar)

	1984 USA	1985 USA
1. Cable	100	150
Including:		
USA-copper cable, telephony	80	100
USA-power cable, etc.	110	0
USA-fiber cable	10	50
2. Transmission equipment	90	120
3. Private exchanges (MD 110), etc.	35	70
Including:		
via Ericsson Inc	20	30
via Honeywell*	15	30
4. Terminal systems (Alfaskop, E 2100)	30	40
5. AXE exchanges	10	20
6. Mobile telephony (base stations, AXE)	30	65
7. Personal computers	2	30
8. Facit (printers, etc.)*	30	34
9. Autotank (gasoline stations)*	0	0
10. Rifa (power components)*	1	1
11. Ericsson Network Projects Inc (network planning and network construction)	0	5
Total sales	428	520

*Not part of Ericsson Inc.

ERICSSON IN THE UNITED STATES



Key:

1. Swedes
2. SHB sphere
3. SEB sphere
4. Foreigners
5. Others in the United States:
6. Rifa power components
7. Facit Products
8. Three divisions in the United States
9. Chief
10. Number of employees
11. Publika-Mobila stations
12. Numbers in diagram indicate percentage of votes

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COMPUTERS

NEW IBM-COMPATIBLE MICROCOMPUTER FROM BULL OF FRANCE

Paris ZERO UN INFORMATIQUE HEBDO in French 17 Dec 84 p 3

[Article by Fabienne Tisserand: "Compatible With the IBM PC/XT: Bull's Micral 30 Available in January"]

> [Text] It was already known under the code name MB90 (see ZERO UN HEBDO No 824). Actually, its name is Micral 30 and it was just introduced officially by the French manufacturer. With this microcomputer, which is both compatible with the IBM PC/XT and conform to Bull standards, the leading French computer manufacturer is discovering a new trade: consumer business.

When he introduced the Micral 30 to the press, last week, Francis Lorentz, general manager of the Bull group, made a point of emphasizing that it was in line with the new orientations adopted by Bull two years ago.

These focus on three major goals: "development of operations in the field of office automation (research and development investments in this sector represent 6 to 7 percent of Bull-Micral sales); determination to get out of the ghetto and design products that will fit in outside environments; and the ambition to offer solutions rather than products."

The Micral 30 is a microcomputer conforming to market standards, in particular to MS-DOS. It is IBM-compatible in seven respects: same processor (8088 at 4.77 MHz) with the optional addition of an 8087 arithmetic coprocessor; same operating system; same display screen; very similar keyboard; same diskettes; same potential for extension with additional boards; and, finally, possible integration in a local IBM-PC network.

However, Francis Lorentz will not present the Micral 30 as "primarily compatible with IBM."

"Certainly, Bull has decided to stick with the MS-DOS standard, and will follow its evolution as long as it remains an open system, but the group is not committed to following IBM at all costs and rejects any dependence on the U.S. manufacturer."

To this compatibility at highest level, a few "plusses" are added, in particular the Prologue operating system which enables the Micral 30 to connect with the whole Bull range (DPS 6, 7, 8 and 88).

Simultaneously, it offers access to applications using the CP8 board.

7 Percent of the European Market

Although, for the time being, Bull is not planning to market its new microcomputer in the United States or in Japan, the group's ambition is to cover 5 to 7 percent of the European microcomputer market in the short term (the keyboard will be available in French, German, Spanish and Italian versions) and to gain a "significant" foothold in Africa and South America.

With the introduction of a microcomputer of this type, the French manufacturer is entering the consumer market and must adjust to new distribution channels (shops, major retailer chains).

At first, Bull will rely on its present retailer network which consists of 180 companies; then, until January 1985, it is planning to select some 50 retailers representing 120 to 150 sales outlets.

The manufacturer is planning to approve them on the basis of their financial standing, their sales potential and their technical and commercial competence. A new retailer contract (providing for discounts of 33 percent) will be redefined.

Company sales engineers will be responsible for OEM [original equipment manufacturers] sales (Jeumont-Schneider is marketing them [as published] under the Jistral brand).

What About Maintenance?

Maintenance will be provided either by the retailers or by the internal departments of the group, which will have 900 service centers in operation early in 1985 (including 6 in the provinces).

Bull now wants to offer a "solution" instead of a "product" approach, and it is publishing a software catalog listing 167 programs that will work on the Micral 30. Among these, we should mention: dBase III, Multiplan, Chart, Framework and Dialogue 2.

The Micral 30, which will be available for shipment to authorized retailers starting in January 1985, is now manufactured near Lille, at Marcq-en-Baroeul, in the Bull-Transac production unit. By the end of next year, it will be manufactured in the new factory which the group is building a few kilometers away, at Villeneuve-d'Ascq.

The flexible automated factory should enable the group to "adjust to the evolution of the market and that of IBM prices."

Five Models

The Bull personal computer is offered in five basic configurations defined as a function of the core memory capacity (128, 256 or 384 Kbytes [8-bit bytes]) and the number of associated diskettes (1 or 2) and 10-Mbyte hard disk.

Three display screen models are offered: two green or amber monochrome versions and one 16-color graphics model.

Here are some examples of published prices for typical configurations of the Micral 30, available to the final user before the end of January 1985:

- FF 21,460 (exclusive of tax) for a 128-Kbyte configuration with 1 diskette, 1 display screen, 1 keyboard (equivalent IBM configuration: FF 21,222, exclusive of tax);

- FF 26,275 (exclusive of tax) for 256 Kbytes, 2 diskettes, 1 display screen, 1 keyboard;

- FF 45,200 (exclusive of tax) for 384 Kbytes, 1 diskette and 1 10-Mbyte hard disk. Same IBM configuration: FF 46,631 (exclusive of tax).

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COMPUTERS

FIRST FRENCH 'SUPERCOMPUTER' MARISIS TO BE READY BY 1988

Paris AFP SCIENCES in French 20 Dec 84 pp 41, 43

[Article: "Marisis On the Right Track"]

[Text] Paris--The first unit of the French supercomputer Marisis should get out of the laboratories in 1988, the leaders of the "large scientific computer" project announced on 13 December in Palaiseau, disclosing to the press for the first time their ambitions and their delays.

Meeting in a symposium at the Polytechnic School, the project leaders were optimistic, although they said their planning was "tight," and for the first time the project was outlined in detail in public.

Already in 1980, the total French dependence in this field and the increasing importance of these machines, which can complete millions of operations per second, had been emphasized by a think tank headed by Prof Jacques Lions, president of the INRIA [National Institute of Data-Processing and Automation Research].

The Directorate of Research, Studies and Technologies (DRET) at the Ministry of Defense was placed in charge of launching the operations: this was a way to stress their strategic importance. Indeed, this concerns all fields in which billions of data must be processed in a complex manner: nuclear weapons, aeronautics, marine engineering, meteorology, engineering, pure research, etc. These machines can do in a few hours what a large computer would take days to do: a decisive advantage in the field of weather forecasting, or to design a space shuttle.

For the time being, there is a U.S. monopoly on these monsters, which cost at least $1 million apiece: two companies, Cray Research and Control Data, are sharing the market, the former having the larger share. As for the Japanese, they have announced impressive results in the lab, but experts are waiting to see commercial products to judge them.

The French dependence is all the greater as this hardware is subject to embargo in the United States: "we had to wait two years after the introduction of the first supercomputer, the Cray-1, before we could get one in France," Mr Ica La Rosa, one of the project leaders, recalled at the Polytechnic School.

Marisis has a budget of over FF 600 million over 7 years. In addition to the General Delegation to Armament (DGA) which supervises the project, there are industrial partners, Bull and SINTRA [Industrial Company for New Radio Engineering Technologies and French Electronics] and cooperators: the Rennes and Nice universities, the ONERA [National Office for Aerospace Studies and Research], the INRIA.

All future large users of the system are taking part in typing and consultations, "the objective being to obtain a machine capable of processing over 200 Mflops (million floating point operations per second)," Prof Andre Rousset, scientific advisor at the Ministry of Defense, indicated.

"Compared with the performance of foreign hardware, that will represent a 2 to 3-year lag in 1988," Mr La Rosa added, "but if we take embargo delays into account, the figures are comparable."

According to Mr Rousset, the schedule is very tight and "technicians are at the mercy of the slightest incident."

The approach is so complex that, like a nest of Russian dolls, the final Marisis project will consist of a collection of subprojects. At the bottom, there is Isis: a high-performance basic computer (50 Mflops) whose mock-up will run in 1985. In 1987, it will generate a "low-end" supercomputer, Marie (30 Mflops) whose goal will be to offer on the market a good performance/price (FF 5 million) ratio.

The giant Marisis computer will consist of an assembly of several Isis units (1 to 7) in an arrangement called Mariane. The first coupling of Isis and Mariane should be completed in 1986, and the first Marisis configuration will include two Isis in 1988, giving it a power of 200 Mflops.

After that, the software will have to be designed and selected. The general delegate to armament, Emile Blanc, invited all university researchers to make a contribution.

Observers also believe that the final performance will depend on the "tricks" used, on which they remain very discreet. According to Mr Jean-Yves Barbonneay, Mr Lions's assistant, a considerable effort should be made on memory technology: indeed, adequate speeds must be available to convey to the computer the billions of data it must process.

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MICROELECTRONICS

FRENCH ELECTRONICS PRODUCTION PREDICTED TO DOUBLE BY 1989

Paris AFP SCIENCES in French 22 Nov 84 p 37

[Article: "French Electronics Production To Double by 1989"]

[Text] According to a survey of the Economic Information and Forecasting Bureau (BIPE) published on 15 November, the French electronics and electrical production will double by 1989, reaching FF 326 billion, but sectors that traditionally show a deficit will continue to do so.

The trade surplus of FF 30 billion expected in 1989 "will actually not be the result of a sounder situation, but rather it will reflect very favorable export prospects for professional equipment," the BIPE pointed out.

Sectors showing a deficit will continue to place a heavy burden on the trade balance. For consumer goods (household appliances and entertainment electronics) for instance, the deficit will amount to FF 15.5 billion in 1989.

Similarly, the data-processing industry will register a deficit of FF 8 billion for a production of FF 47 billion and, for components, a deficit of FF 2 billion for a production of FF 22 billion.

According to the survey, France "is not without assets (telematics, cabling program, computer-integrated manufacturing), but success is far from certain." Overall, market growth, which was negative in 1983 (-0.1 percent by volume), resumed in 1984 and, next year, it should reach a rate close to the rate expected for the period 1983-1989 (4 percent), according to the survey.

In consumer electronics, growth will be 5.9 percent (compared with 10.5 percent during the period 1973-1979).

Durable electronic goods (industrial, military, etc.), a traditionally strong sector, will register a growth of 6.4 percent in 1985, followed by a setback with an annual average progression of 4.7 percent until 1989.

The telephone industry, one of the first in the world, will progress only very slowly until 1989 (+ 2.9 percent), reaching sales of FF 23 billion.

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MICROELECTRONICS

RENNES FACTORY OF SGS-ATES INCREASES CHIP PRODUCTION

Paris ELECTRONIQUE ACTUALITES in French 14 Dec 84 pp 1, 22

[Article by J.P. Della Mussia: "An FF 170-Million Investment: SGS Is Starting Its Linear IC Production on 5-Inch Wafers in Rennes"]

> [Text] Rennes--Following an investment of FF 170 million, the French subsidiary of the Italian company SGS [expansion unknown] just produced its first 125-mm wafers at its Rennes semiconductor factory; its available production capacity is expected to reach 15,000 wafers per month by the end of 1985, corresponding to a fivefold increase in its production capacity (in number of chips) compared with the beginning of 1984 (8,000 wafers per month, but with a diameter of 75 mm).

The Rennes factory of SGS thus becomes a major French center as far as linear integrated circuits are concerned, like Thomson Semiconductors in Saint-Egreve, Motorola in Toulouse and RTC [Radio Technology-Compelec] in Caen; its exports already exceed two thirds of the factory production: they amounted to FF 85 million in 1983 (68 percent of the factory sales), FF 100 million in 1984 (79 percent of sales) and are expected to represent 91 percent of the factory sales in 1985.

Under the agreements it signed with the Ministry of Industry to finance its investments, SGS also promised to achieve a positive export/import balance for its French operations starting in 1987. Whereas SGS sales in France (including, therefore, imports) amounted to FF 233 million in 1983, they should exceed FF 300 million in 1984. Simultaneously with the start of 5-inch production in Rennes, a design and development center is being opened on location. The Rennes factory is therefore undergoing profound changes.

Until now, the SGS Rennes factory had not been much in the news. It was created in 1965-1966 to assemble and distribute small-signal transistors, and its history was marked essentially only by the start of power-transistor production in 1972, the distribution of 400-V planar transistors in 1976, the start of subcontracting for Serge Dassault Electronics in 1978, the conversion from 2-inch to 3-inch wafers in 1979, the distribution of the first multi-epitaxial transistors in 1980, and the start of linear integrated-

circuit production at the same time as it gave up any transistor distribution in 1983.

Very few investments were made for 12 years, until 1979; they rose from FF 6 to 10 million per year from 1979 to 1983; since then, a vast operation was launched, in the context of both the French microelectronics plan and the Italian company's foreign development plan. This plan, as is known, provides for two stages, for a total cost of FF 260 million (at the dollar rate of the end of 1983):

- the first stage provides for the creation of an 125-mm production unit having a capacity of 15,000 wafers/month, which is starting production today, several months ahead of schedule; simultaneously, a development and design center is created, as well as a social center;

- the second stage provides for the creation of a power-transistor production module that will probably be equipped to process 150-mm wafers; the launching of this stage will depend on market conditions in 1985.

Simultaneously with these two stages, the present assembly facilities of the factory will be reorganized, and an assembly unit distinct from the present factory might be created in collaboration with Matra-Harris Semiconductors. Construction of this unit could start in 1986, so that production would begin in 1987, and full production would be achieved in 1988/1989 (100 million parts per month with 130 people). Rennes and Saint-Nazaire are of course competing to get the factory, which should "run" at least 80 percent for SGS.

As we said, completion of the first stage was made possible by the convergence of interests of the SGS parent company and the French microelectronics plan: the former wanted a second-source factory in the world, in addition to its Milan factory, for its linear circuits, and it also wanted to create a design center in France, as it had done in the United States, in Germany and in Great-Britain. As for the government, it wanted to develop the production of linear semiconductors in France to support consumer electronics and automobile operations, among others, in the context of the plan. But it was also interested in the creation of a design center for high-voltage integrated circuits, among other things. In practice, government aid took the form of (undisclosed) repayable advances from the Directorate of the Electronics and Data-Processing Industries, the traditional aid from the Delegation in Charge of National Development and Regional Action and loans at preferential rates from the National Credit Bank.

However, if SGS gave the green light to the operation, it was only because it felt that costs at Rennes (hourly rates plus energy) were 5 to 10 percent lower than in Italian factories. (A figure that could be compared with those of Motorola which claims that costs at its Toulouse factory are now 10 percent higher than in Scotland).

SGS stated that it was pleased with its negotiations with the government but could not help pointing out that they lasted three years. The company also

regretted that, although the government expressed its determination to adopt measures conducive to a better use of the plan in time, no material decision had been made as yet, especially concerning night work for women and the elimination of the obligation to give workers Sundays off.

The Second 5-Inch "Linear" Factory of SGS

Rennes is the second 5-inch linear factory of SGS; the first one, in Milan, started production last February. As far as machines are concerned, the Rennes factory is identical to that of Milan and that of Singapore, which will produce its first wafers in three months. Since machines are identical, any problems that may arise will be easier to solve. The masks used are proximity, not projection (Canon) masks, an economic method made possible by the 6-micron technology used. By the end of 1985, the circuits will be converted to 4-micron technology, but these masks will still be suitable for this new technology. (For 12.5-mm^2/6-micron circuits, the yields obtained in Milan on 5-inch wafers are 85 to 90 percent).

This month, the 5-inch line in Rennes will produce some 1,500 wafers supporting simple linear integrated circuits and positive-voltage regulators. When conversion to 4-micron takes place late in 1985, TV vertical deflection circuits, Darlington arrays and a conversation circuit will be added.

The other operations of the Rennes factory are not affected by the arrival of this new product line. In particular, Rennes remains the only factory of the group to produce semiconductors in plastic micropackages--SO8, SO14 and SO16/1.5 W (and soon SO16/2 W)--in quantities of 1.5 million parts per month for the time being, and 2.2. million parts per month in 1985. These packages contain simple linear circuits (amplifiers, comparators, electronic ignition controls) and C-MOS [complementary metal-oxide semiconductor] 4000B and TTL-LS [transistor-transistor logic/large scale] circuits.

The Rennes factory is also specializing, for the whole SGS group, in high-reliability 300-mW 250-W semiconductors, for which its production capacity is 15,000 parts per month.

Finally, the factory will retain its production of TO3/TO66 packages (200,000 parts per month for linear integrated circuits and power transistors), multichip products (100,000 parts per month for double, quadruple and Darlington circuits) and its hybrid subcontracting activity (2,000 circuits per month).

The development and design center of the factory, completed last August and now employing 12 people (30 or so in 1985), was created to enhance the value added in France, take advantage of the group's technologies and generate large-volume original circuits while achieving financial balance. The center is directly linked to Milan; it is using a VAX 11-780 computer operating, among other things, with two Calma graphics work stations and two work stations operating on Daisy Logician D; it also includes a small electronics laboratory for circuit development. The center is not only in charge of designing customized circuits for users and circuits designed with the SGS Zodiac system, but also of fulfilling study contracts and collaborating with universities, in particular to develop marketable circuits.

Some of its principal current projects are the following:

- 2/4-lead and numbering circuits, programmable protections and high-voltage interfaces for type-T83 receivers;

- transmission and digital rephasing circuits (2B + D connection for instance) for integrated-services digital networks;

- level and proximity detectors for the automobile industry;

- smart-card circuits, printing controls and protocol controls for data processing.

These projects are distributed among the three present teams, namely telecommunications, logic integrated circuits, and automobile (currently being set up).

One of the main advantages of the center is of course that it can design simultaneously high-voltage and high-density integrated circuits, in particular in integrated-injection logic technology.

The center has also resumed the development of the subscriber junction under the DAII-CNET/SGS-SAT [Directorate of Industrial and International Affairs-National Center for Telecommunications Studies/SGS-Telecommunications Company] contract signed in April 1982 for a 34-month period. SGS is now in a position to deliver the first samples of the junction and associated protections.

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MICROELECTRONICS

BRIEFS

THOMSON-CEA IC'S--On 13 December, in Paris, Thomson-CSF and the Atomic Energy Commission (CEA) signed a cooperation agreement on integrated circuits aimed at developing a new process using the MOS [metal-oxyde semiconductor] technology. The partners will pool their technical, human and financial means and will also develop prototypes using emerging technologies and intended for the electronics industry. The research teams will be housed in the new premises of the Electronics and Data-Processing Technology Laboratory (LETI) of Grenoble, which is an extension of the Technology and Industrial Development Research Institute of the CEA. The LETI will be responsible for implementing the cooperation, for which Mr Lazzari (CEA) was appointed executive director. 1985 goals involve the production of C-MOS [complementary MOS] circuit prototypes integrating 1.2-micron links, and the development of a submicron C-MOS process to meet Thomson's industrial needs, but which might also be made available to other companies. [Text] [Paris AFP SCIENCES in French 20 Dec 84 p 46] 9294

THOMSON-OKI COOPERATION--Thomson-CSF and the Japanese company Oki Electric Industry Company Limited have signed a reciprocal second-source cooperation agreement for gate arrays in C-MOS [complementary metal-oxide semiconductor] 3-micron then 2-micron technology developed by the two parties. The agreement also provides for close cooperation between the two companies concerning the exchange of their industrial knowhow in the field of integrated circuits [Text] [Paris LA LETTRE THOMSON in French 24 Dec 84 p 2] 9294

CSO: 3698/278

SCIENTIFIC AND INDUSTRIAL POLICY

AUSTRIA INVESTS MILLIONS TO PROMOTE MICROELECTRONICS

Microelectronics Has Priority

Vienna PROFIL in German 21 Jan 85 p 34

[Article by St. M. Gergely: "Microelectronics Support--The Computer Billion; The Competitiveness of Austrian Researchers and Companies Is To Be Strengthened by Government Promotion"]

[Text] Professional computer freaks are nowadays being tempted by millions in cash: minister of science, Dr Heinz Fischer, is spending 30 million schillings and in each of the next 2 years will spend 70 million in order to give priority to microelectronics research. Dr Ferdinand Lacina, chief of the newly established Ministry for Public Industry and Transport, is spending 250 million schillings per year in the course of 3 years for EDP investments in Austrian enterprises, these expenditures being in the form of "nonreturnable funding" and in the form of loans. In addition, a separate promotion program has been set up for CAD/CAM.

When the high-tech-happy ministers added up their microelectronics support budget they also found a suitable name for it: "The Billions Program."

Whether this will permit our domestic enterprises to catch up with foreign competition in the EDP markets of the future remains to be seen. In almost all industrialized countries similar programs have for a long time been already under way. The portion of government outlays for research and development--measured in percent of the gross national product--continues in Austria to be considerably less than in, for example, the FRG.

In an effort to reassure the traditional recipients of funding Fischer says "we must naturally also continue to water the entire garden of science." Nevertheless, the watering can principle of government promotion is also tending in Austria to concentrate on special areas. This process has begun with existing proven operations: altogether 12 research facilities (engaged in special areas ranging from semiconductor technology to artificial intelligence) have been declared to be "focal institutions" of the microelectronics program because "they have already cooperated successfully with industry and have an internationally recognized specialist as chairman." The institutions were at the same time declared to be "preferred cooperative partners" for companies engaged in research.

In other words, having command of computer technologies they can thus also partake liberally of company support funds.

While Fischer in this way aims at equipping the universities with chips his ministerial colleague Lacina supplements this (and his budget is almost four times as big) through subsidies for "manufacturing transfer" and for company investments.

The microelectronics millions of Lacina are not intended to serve only the nationalized companies; the CAD/CAM activity is aimed especially also at small and medium-sized enterprises. Sharply delimiting his role Lacina declares "innovation has always been and continues to be an entrepreneurial task." And he asserts that while the government can give financial support it cannot itself take the initiative.

Fischer and Lacina are unanimous in their assurance that "we intend to carry out the program in a nonbureaucratic manner." Nevertheless--as had to be expected--in order to provide expert-witness evaluation of applications for support it has been necessary to set up a new commission. This commission will be for surveillance of maintenance of the established guidelines of the support program. In order to demonstrate uniformity the Ministry of Science has been selected as the sole agency receiving all applications. There the staff of Dr Norbert Rozsenich, recently appointed as chief of the research section, will now determine which of the two ministries shall be responsible for the individual applications (up to now there have already been several dozen concrete projects). Fischer declared to our interviewer: "My people stake their lives on it that these applications will reach the proper agency."

[Box]

Who Is Supporting Microelectronics in Austria?

The Federal Ministry for Public Industry and Transport: Manufacturing transfer and investments in the area of microelectronics or CAD/CAM: subsidies up to 10 million schillings per enterprise and year (for CAD/CAM: 1 million schillings); loans (maximum term at a maximum redemption-free period of 4 years; interest rate 5 percent per annum).

The Federal Ministry for Science and Research: Research projects in the area of microelectronics and information processing; compensation for calculable costs.

Fund for the Support of Scientific Research: Research projects (focal point microelectronics); contract research; subsidies/assistance or loans.

Research Promotion Fund for Commercial Industry: Applications-oriented projects, support contributions, loans (4.5 percent interest per annum); credit costs subsidies and assumptions of liability up to 50 percent of the estimated costs.

The Austrian Investment-Credit Company: Investment projects and innovation projects; e.g., construction of prototypes; microelectronics enterprises (credits at 4-percent interest per annum); TOP enterprises (credits at favorable interest rates); innovative financing enterprises.

Innovation agency: Innovation counseling; technology transfer; promotion of individual inventors (credits up to a maximum of 100,000 schillings).

Additional promotional agencies: BUERGES Guaranty Fund; Special Enterprise for the Promotion of Foreign Trade-Oriented Research Projects (Federal Chamber of Commerce); Jubilee Fund of the Austrian National Bank; the FGG Financing Guaranty Company; the Viennese Innovation Company INNOVA; Counseling and Information Agency for Microelectronics (BIME) (Economic Support Institute).

'Applied Electronics Institute' Founded

Vienna ELEKTRONIKSCHAU in German Nov 84 p 11

[Interview with Dr Fritz Paschke, professor, by Franz Maderbacher: "Cooperation Doubles the State of Knowledge--The Microelectronics Institute: A Service for Industry"; date and place not specified]

[Text] Though late, the Austrian Government has finally recognized that the future of industry lies in the optimal utilization of the most modern technologies. The government has succeeded in setting up an extensive support program for electronics in Austria. It is the aim of this program not only to give a financial lift to users of electronics, but also to offer them the vigorous support of a first-class team of experts. This project is being realized through the foundation of an "Applied Electronics Institute", which while not a department of the advanced school is nevertheless "technical university [TU] associated".For Dr Fritz Paschke, professor, who together with "his" institute has for a long time sought contact and cooperation with industry and who has in fact found them, this represents the fulfillment of a long-cherished wish.

ELEKTRONIKSCHAU: Professor Paschke, when did the idea originate of establishing a special electronics institute for industry?

Paschke: That idea is actually a relatively old one. In the United States such institutions have in fact been in existence for a long time. In principle, besides teaching and research the task areas of a TU institute really include services to industry. However, it is insufficient to conduct these services over the long term in what might be called a half-hearted way. Hence, the suggestion that an association for the promotion of microelectronics should be founded which in turn would call into being an institution external to the universities.

ELEKTRONIKSCHAU: Who belongs to this association?

Paschke: At the moment there is a proposer's committee whose membership includes professors of various Austrian universities; representatives of

industry such as Siemens and AMI and also reprsentatives of the Ministry of Science. The statutes of the association have been recently approved by the Ministry of the Interior so that nothing stands in the way of founding this association.

ELEKTRONIKSCHAU: What are the goals of the planned electronics institute?

Paschke: In accordance with the statutes the association and hence also the institute aim at comprehensive and interdisciplinary promotion of microelectronics and its applications while at the same time taking into account effects upon human beings and society. The aim will be to promote cooperation and exchange of experience with private and government institutions. We also think of ourselves as a center of communication between these institutions. Our goals also include individual counseling and provision of services to members while at the same time giving special attention to the needs of small and medium-sized enterprises. In addition to training and continued education in the field of microelectronics the association is intended also to constitute a sort of clearinghouse for project initiatives.

ELEKTRONIKSCHAU: What do you mean by "clearinghouse"?

Paschke: I could well imagine a situation in which an enterprise has a need which is related to microelectronics and then turns to the association, which would be in a position to give comprehensive advice as to where in Austria suitable experts might be reached and as to just what possibilities exist for project realization and as to what foreign institutions, under some circumstances, one would have to work with.

ELEKTRONIKSCHAU: When will the Applied Electronics Institute begin its activities?

Paschke: The new budget year begins in January 1985. I hope that as of that point in time it will be possible to offer partial financing of projects and to make money available for properly setting up the infrastructure of the institute. On the basis of our previous experience there will certainly be no lack of projects. But I do have some anxiety as to whether we will be able to quickly acquire enough good people. I feel sure that a good number of them can be supplied by the advanced school institutions.

ELEKTRONIKSCHAU: So far as I have heard, you are to be in charge of the new electronics institute....

Paschke: Temporarily, yes. But in principle it is left up to the officials to decide who is to be the permanent manager. In any case, at the present time I am doing the preparatory work. To me it is not a matter of much importance whether I am in charge or not; in any case, I shall be cooperating.

ELEKTRONIKSCHAU: The new institute is to commence its work using the basic facilities and employing the specialized staff of the technical universities. Do you believe that industry has sufficient confidence in the advanced schools?

Paschke: Certainly, one must find a broad basis of confidence to begin with. For this it is necessary that all partners should have a clear understanding of the strengths and also of the weaknesses of the institutions. But the advanced schools in Vienna and in Graz seen on the international level have achieved outstanding accomplishments and these accomplishments have also been in the area of industrial development. It is unfortunate that all of this has found little resonance in domestic industry, but thought must be given to the reasons for this.

ELEKTRONIKSCHAU: What sort of support can an enterprise expect to receive from the new electronics institute?

Paschke: Basically, any form of cooperation is possible. Instrumentation and facilities of the advanced school institutions are available; we can even lend engineers to the enterprises for a specific length of time or we can work on entire projects ourselves in our own house. On the basis of experience the problems arise in transferring a development into mass production. We have great confidence in ourselves but we admit that we possess little real experience in mass production. But such experience can only be acquired by someone who is continuously active in manufacturing. But we do know a lot of people who have such knowledge and therefore can communicate such knowledge when needed. Naturally, we must feel our way at first and collect experience. And the possibility should also not be excluded that in the beginning we will make one or two belly landings.

ELEKTRONIKSCHAU: What in your opinion must be done to provide electronics in our country with the boost which it so urgently needs?

Paschke: Already some time ago I have put together a 16-point promotion catalogue which in my mind contains all important promotional measures for electronics. Foremost among these is the creation of a climate which favors creativity, favors a positive attitude and favors a readiness to take risks. It is also important to pay special attention to the three interfaces of discovery, invention and transfer-into-manufacturing. An essential requirement is also the creation of genuine venture capital.

ELEKTRONIKSCHAU: Professor Paschke, I thank you for your conversation.

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SCIENTIFIC AND INDUSTRIAL POLICY

DENMARK: FIVE-YEAR PLAN TO DEVELOP TECHNOLOGY

Research Council Activities

Copenhagen INFORMATION in Danish 24 Jan 85 p 3

[Article by a/s: "Three Hundred Million Kroner for Technological Development; Research Councils to Administer 5-Year Plan"]

[Text] Three hundred million kroner are to be distributed purposefully from now to 1990 to researchers and groups of researchers who can obtain new knowledge which Danish firms can use within the high-technology field.

The six research councils under the Planning Council for Research, which is an advisory authority for Education Minister Bertel Haarder, will from now to 1990 distribute the 300 million kroner for "basic research in support of technological development."

This is the content of the detailed plan proposal which the Planning Council for Research, the PRF, has now forwarded to Education Minister Bertel Haarder.

"The matter is being discussed at the moment in the Education Ministry and we are waiting for the minister's, it is hoped, positive, reaction," Research Secretariat Section Chief Ib Terp says. "It is our impression that the minister will proceed with the proposal, so we are confident."

The new research program is being coordinated with the Technology Council's 1.5-billion-kroner technological advancement program. When the Technology Council at the end of 1983 submitted a proposal to the industry minister regarding 1.5 billion kroner of selective support for Danish firms' conversion to high technology, it started some thinking in the Education Ministry. Especially when the Technology Council got the proposal through without problems, which took most by surprise--in the Technology Council, too.

At the same time came a report from the Technical and Scientific Research Council regarding the situation in this research council's areas and the PRF discussed strategy.

"We then went to the education minister and said that we felt that there was a need for special initiatives in the more basic science area. And the

minister asked us to come with a proposal," Ib Terp says. The draft of a high-technology initiative under the education minister's direction was ready in the spring of 1984, and Bertel Haarder after this asked for a detailed proposal, which is now at hand.

The objective of strengthening technical and scientific basic research is a broad one. As it reads in the plan proposal, "The program has the objective of procuring new knowledge which can throw light on the high-technology possibilities for business in the longer term. It will also strengthen the possibilities of supplying Denmark with the new knowledge generated in foreign research, and finally it is an objective to educate researchers with a view toward subsequent employment in industry."

The reasons for the program are also not new. If Denmark "is to maintain its high standard of living and strengthen its economic position" we must be up in the first ranks with research and with the utilization of others' results. Otherwise our ability to compete will be worsened and the future will appear bleak. That this is true can be seen from the fact that other industrial countries are thinking in the same way: "During these years a considerable buildup in the research field is taking place in, largely speaking, every industrial country."

The fields Denmark will bank on are research on materials and materials engineering, process and production engineering, design engineering, bioengineering and environmental engineering research, informatics, technology and social change, as well as research in technological service institutes.

The application deadline for 1986 is 15 March 1985, and the pool is expected to be at 48.7 million kroner. The program is beginning in 1985, and the money has already been allocated. This concerns the first 22.1 million kroner.

Technology Council Activities

Copenhagen BERLINGSKE TIDENDE in Danish 30 Jan 85 p 6

[Article by Svend Bie: "One Hundred and Thirty Million Kroner for New Technology"]

[Text] Sixty percent of the support for projects under the technological development program will go toward the development of information technology. Private firms are applying for under 10 percent of the grant for technology projects.

The Technology Council has now granted a good 130 million kroner as a subsidy for technological development over a 5-year period.

Half of the money, a scant 65 million kroner, comes from EC's Esprit program, which is to support cooperation in new information technology across national boundaries.

At the turn of the year the industry minister summed up how much money the Technology Council has allotted for projects which can be included under the technological development program.

It appears that firms and institutions have already signed up for grants of over 50 million kroner in 1985, while under the technological development program an assurance of support of 25 million kroner was given in 1984.

At the present time assurances of grants of a scant 30 million kroner have been given for 1986, while assurances for 1987 amount to 15 million kroner.

Less than 10 percent of the mcney went to private concerns' own development projects. It is, in brief, the projects of public utility which dominate.

Information technology and microelectronic development projects are commanding grants of 80 million out of the 130 million kroner. This includes, as mentioned, the 65 million kroner of EC money under the Esprit project.

The utilization of information technology in firms is the next largest grant group with assurances of 26 million, which mainly has been given for the current year.

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SCIENTIFIC AND INDUSTRIAL POLICY

MATRA 1984 EARNINGS SHOW EFFECTS OF DIVERSIFICATION

Paris LE NOUVEL ECONOMISTE in French 1 Feb 85 pp 52-57

[Article by Jean Gloaguen: "MATRA: Civilian Sales Are Marking Time"]

> [Excerpts] Rich in 1980, worried in 1984. MATRA [Mechanics, Aviation and Traction Company] which was a total success in the military sector, is discovering to its cost the risks of consumer markets.

"Where are we going? The MATRA spirit and business are vanishing. And so are workers! It is high time for our firm to realize that its present day-to-day situation and future prospects are far less brilliant." This letter signed by all MATRA unions is certainly a lesser concern for chief executive officer Jean-Luc Lagardere than the murder of Mr Rene Audran, in charge of arms exports at the Ministry of Defense. It does not prevent Mr Lagardere from being as active as ever: he is confident that MATRA will participate in the consumer computing program decided by the government; as head of Hachette, he would like to see the group acquire the weekly JOURS DE FRANCE, now close to Mr Marcel Dassault. All the same, the unions' warning reveals the existence of a malaise at MATRA.

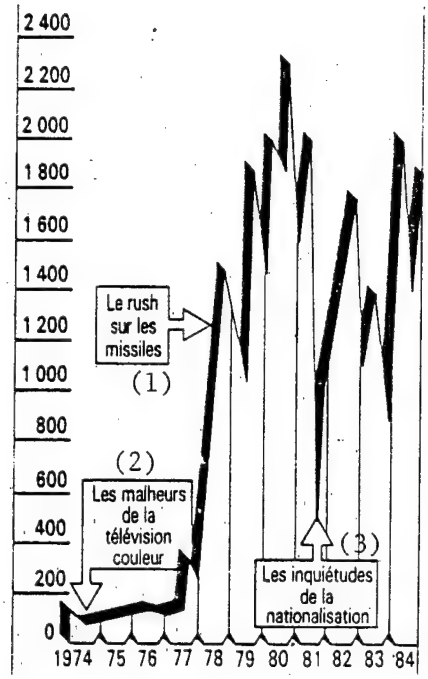
For MATRA, the famous missile manufacturer (sales of FF 15 billion; 27,000 people), is now undergoing reorganization, cuts and adjustments. A symbol: before Mr Bernard Hanon's departure, the company was to sell its automobile subsidiary to Renault. Many other French companies are also cleaning house, you will say. Yes, but only three years ago MATRA was a symbol of success: its shareholders saw it as a model of management and strategy; its employees were glad they belonged to a team led by a gifted captain with consistent good luck; consumers saw it as a reason to believe in France's chances in high technology. Well, then, is the State, who has owned 51 percent of the company stock since 1982, to blame if this beautiful mechanism is now misfiring?

Actually, MATRA's misfortunes are the result of its diversification in the civilian sector. Between 1978 and 1980, the large independent firm focussing on the military sector changed into a conglomerate ranging from watches to automobile dashboards, through semiconductors, machine-tools, telephone equipment, microcomputers, etc.

Diversification: Sometimes Wide of the Mark

Sector	Companies	Percent owned by MATRA	Sales (millions of French Francs)*	Personnel
Military			5,700	6,700
including:	parent company		4,250	3,500
	MATRA-Manurhin	76	1,000	2,400
	MATRA Electronics	100	250	370
Space	parent company		1,250	1,200
Electronic components			600	1,000
including:	MATRA Harris	50	340	600
	LTIS [expansion unknown]	100	80	160
	Comelim	51	170	250
Data Processing			210	490
including:	MATRA Data Systems	100	110	400
	MATRA Tandy Elect.	50	70	60
Telecommunications	MATRA Communications	63	1,100	2,500
Automation			600	800
including:	Sormel	71	60	120
	MATRA Manurhin Automatic	95	180	350
	MATRA Datavision	55	130	120
	GCA Automation	50	210	200
Automobile	MATRA Automobile	100	400	1,200
Automobile Electronics			2,850	9,500
including:	Jaeger	60	1,900	6,200
	Solex	95	950	3,300
Watchmaking	MATRA Watch-Making	83	850	1,150
Transportation			300	370
including:	MATRA Transports	100	200	120
	Interelec	90	100	250
Total MATRA Sales			15,000	27,000

* 1984 estimates



Storms on the Stock Exchange

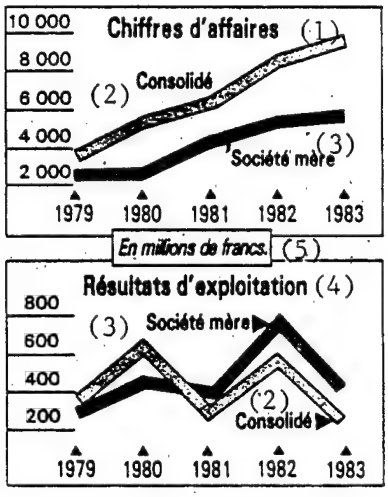
Variation of MATRA Stock Quotations on the Paris Stock Exchange, Adjusted in Francs. In 1980, Attribution of Three Free Shares Per Outstanding Share.

Key:
1. Rush on missiles
2. Misfortunes of color television
3. Concerns about nationalization

Burdensome Subsidiaries

Parent Company	1976	1977	1978	1979	1980	1981	1982	1983
Sales	1,472	1,795	2,207	2,833	2,903	4,501	5,600	5,970
incl. military	834	1,023	1,276	1,818	2,202	3,270	4,089	4,176
Export sales	526	663	887	1,387	1,712	2,511	4,090	4,357
Operating results	77	189	332	316	490	418	815	404
Backlog of orders[1]	2,640	6,671	7,450	8,022	10,899	12,349	13,570	11,690
Personnel[2]	4,622	5,141	5,496	5,836	5,105	5,536	5,933	6,065

Sales in millions of French francs. 1. At year-end. 2. Actual personnel.



Key:
1. Sales
2. Consolidated
3. Parent company
4. Operating results
5. In millions of French francs

The table and the two graphs show the effect of subsidiaries on the results of the MATRA group. From 1979 to 1983, the percentage of consolidated sales accounted for by subsidiaries rose from 28 to 40 percent. Starting in 1981, however, consolidated operating results were lower than those of the parent company: they were negative for diversification operations. Minority shareholders retaining their investments in companies associated to MATRA were the most heavily penalized. Their participations were even reduced because new capital was injected into ailing companies by MATRA.

Balance

Its disappointments were commensurate to its ambitions: since 1981, its subsidiaries have accumulated a deficit of some FF 2.5 billion. A hemorrhage made bearable only by the sizeable profits derived from missiles. And MATRA, which had failed in other attempts before, was able to assess its lack of knowhow with private customers.

When the left came to power in May 1981, a question was raised: will the nationalization of the arms sector provided for in the joint program actually take place? In other words, will the structure be dismantled? Mr Lagardere insisted that his company was not a business like other businesses. "In France and abroad, it is a symbol of the creative dynamism of modern industry and its international prestige... We are claiming the status of down-to-earth visionaries," he told his shareholders on 29 June.

Subway

Soon, the MATRA dossier was dissociated from those of other candidates to nationalization. Mr Pierre Mauroy who, as mayor of Lille, was the first and only customer of the Val, MATRA's automated subway, took care of it personally. On 12 October, a plan was finalized: the State was to take over 51 percent of the Velizy firm, half through a public trade offering, and half by subscribing an equity stock increase; the company's interests in the media (Hachette, Europe No. 1 and LES DERNIERES NOUVELLES D'ALSACE) were to be ceded back to private investors. The protocol, the details of which were never published, also provided that the state and the other shareholders would appoint equal numbers of board members and that the chief executive officer's vote would be decisive in case of a conflict. The chief executive officer? Mr Lagardere, of course.

"A one-sided contract in which the party with the lion's share--that is us, the State--does not lay down the law," Mr Pierre Joxe, then chairman of the socialist group at the National Assembly, protested. Maybe, but did the government have any other choice in dealing with a firm most of whose personnel was united behind its chief executive officer? In October 1981, the labor elections at the Velizy headquarters gave 35 percent of workers' votes to the Workers Force, which was presenting candidates for the first time, whereas the General Confederation of Labor dropped from 80 to 46 percent. The government was in a weak position, not only to face the rank-and-file, but also to face the shareholders who were displeased with the estimate made of their stock. The State's entry fee, initially set at FF 1 billion, was increased by 44 percent in March 1982 (from FF 1,250 to FF 1,800 per share).

Even before this renegotiation was completed, the first cracking sounds in the structure were being heard. They were to become louder. From 1981 to 1983, Manurhin posted a deficit of FF 775 million; MATRA Automobile, FF 300 million; Jaeger and Solex, FF 350 million; components, FF 370 million; MATRA Watch-Making (formerly Jaz), FF 150 million. In 1983, all branches, except the military, registered losses.

There are three reasons for this poor performance: the solidity of the firms acquired was poorly assessed; the rules of competition on civilian products were ignored; the role of technology was overestimated.

The solidity of the firms acquired was poorly assessed? One example: Manurhin. In August 1978, when MATRA acquired 32 percent of its stock for FF 76 million, the Mulhouse company was thought to be in resounding good health: had it not created 1,500 jobs since 1975? Its light weapons, its ammunitions and its mechanical knowhow (automatic lathes) were presented as complementing MATRA's missiles and high technology. Another tune was heard after May 1982, i.e. after the death of Paul Spengler, since 1942 the all-powerful boss of the company founded by his father. The new chief executive officer appointed by MATRA, Mr Antoine Veil, had hardly taken up his position when he discovered that the company had been virtually bankrupt since 1979, due to the excessive variety of its production, a deadly financial cost ratio (8 percent of sales) and an obsolete production plant. Mr Lagardere's lieutenant explained later on that the former, "too busy and concerned at the time by the nationalization issue," had acquired an interest in the firm without giving it thorough consideration.

After a glimpse at the scope of the disaster, an appeal to the State was made to avoid filing for bankruptcy: the stock was restructured through an equity contribution of FF 235 million from MATRA, the latter also confirming FF 140 million in advances; for their parts, banks were "invited" to consolidate FF 400 millions in loans.

Breaking Up

Industrially, Manurhin's structure was changed drastically: sites were closed, operations were sold and, in particular, machine-tool production was stopped and corporate assets divided between the military and civilian sectors and taken over to be directly managed by other MATRA divisions. After this harrowing hurdle race, Mr Lagardere found himself left with a nice consolation prize: good representation in ground war equipment.

Like Manurhin, Peritel was acquired after only a few days of negotiations and then became a millstone that had to be gotten rid of. The same was true of Jaeger. On one occasion, however, a quick decision turned into a blessing: Hachette, which achieved a nice recovery. Too bad that the publishing group, whose chief executive officer is Mr Lagardere, was dissociated from MATRA.

Not content with making hasty acquisitions, MATRA also plunged into the unknown when it got involved in mass-produced industrial products. With missiles and satellites, the company's two strong points, technical expertise is what counts; cost is relatively of secondary importance for public clients concerned mainly about performance. The same is not true of civilian equipment: the merciless verdict of competition is defined based on a subtle mix of price, fame, commercial strength and quality.

The slap received in 1974 in the color television sector should have taught Mr Lagardere that he should not improvise with consumer goods. The small EMO [expansion unknown] manufacturing firm acquired from Mr Floirat turned into a bottomless pit.

Five years later, the same thing happened in watchmaking. Federating Jaz, Jaeger, Cupillard Rieme, Herma, Yema and Bayard amounted only to producing 2 million watches per year: 10 to 20 times less than the Japanese Hattori (Seiko), the U.S. Timex or the Swiss Asuag. The disadvantage was still made worse by the advance that the foreign giants had taken in electronic watches and distribution networks that no longer included jewelers. No wonder that, in the end, MATRA had to resign itself to sign an agreement with Hattori. The Japanese firm owns 15 percent of MATRA Watchmaking, to which it is supplying electronic modules; the French partner, which has lost 2 jobs out of 3 in five years, is merely manufacturing cases and dials. Painful epilogue of a venture that started with the ambition of endowing France with a large worldwide watchmaking group.

In the automobile industry, where layoffs are not as easy, the misadventure was far more costly--in 1984, the Romorantin assembly line was in operation for only half the year! After brilliantly demonstrating its ability on race tracks, MATRA had wisely given up competition cars. Its objective, making its name known internationally, had been reached. Why, on the other hand, did it persist in making private cars since 1968 (530, Bagheera, Rancho, Murena, Espace) when it could have only a marginal production, a small degree of integration, and when it must depend on one of the large manufacturers for its marketing? Again in 1979, Mr Lagardere refused to give up his automobile department, and agreed only to an association with Talbot, which recently became a Peugeot subsidiary: "I am not an American manager with a computer instead of a heart," he stated. However, heart and business rarely go well together. Today, after Talbot's withdrawal and a costly calvary--and unless Mr Georges Besse comes back on his predecessor's decision--Renault should take over MATRA Automobile, which is already producing the Renault Espace van.

Watchmaking, automobile, MATRA's ignorance of the market also extended to automobile equipment, telephone, data processing, and robotics. Thus, Mr Lagardere found out only too late that Jaeger's line of products was dated, that it was less competitive than its rival, Veglia. And that car manufacturers were squeezing their suppliers.

"MATRA's major sin was to succomb to the myth of high technology," a consultant analyzed. Indeed, it all happened as if the group were convinced that a product embodying the latest innovation was a radically new product, i.e. a market to be conquered. With MATRA Harris Semiconductors, the group was to make a name for itself in automobile components, telephone, watchmaking, etc., all operations about to convert to electronics. Unfortunately, this attractive reasoning was seldom right.

Managing civilian technology is a difficult art. After its attempts in transportation, MATRA is in a good position to known it. Although engineer-

ing and commercial prospecting for the Val started some 12 years ago, this equipment has still attracted only one client--Lille. As for Aramis, it is still waiting for its first order. As a result, the 370 workers of MATRA Transport in Vanves are wondering what will become of the company if it does not get any contract in 1985 (Toulouse? Orlando?).

Still, designing transportation systems is somewhat similar to designing a sophisticated weapon or a satellite. When it comes to the bulk of consumer electronic products, you must choose the terrain on which you are going to fight. Small and highly independent teams are often best adapted to test new ideas. As soon as they have tried it out and shown that outlets exist, specialists in the profession join in with their technical, financial and commercial striking force. In the first case, the engineer is king; in the second, knowledge of the trade will win. By using both approaches at the same time, MATRA scattered its efforts and gave the impression that it was just tinkering.

Perpetuation

A succession of wrong moves? Undeniably, if we consider short-term financial results. But a strategy should not be judged either on its costs or on its immediate dividends. MATRA could have discarded its problem subsidiaries quickly and under honorable financial conditions. "At least, our intervention made it possible to keep some firms under French control," Mr Lagardere pointed out. "If I did not sell these companies, it is mainly that my goal is a long-range one, the perpetuation of the company," the chief executive officer of MATRA went on. Hence, the intense research effort made by the group: 13 percent of sales. And also, in spite of huge learning costs, its perseverance in new operations, in order to compensate for future fluctuations in the weapons sector.

"A corporate leader is not worthy of that name if he does not take any risks. The only limit he must set for himself is that he should not jeopardize his group," Mr Lagardere is fond of saying. His credo is no longer shared by some executives of the parent company, who are not far from seeing themselves as being sacrificed on the altar of diversification. MATRA's mistake was to try to do too much. The reasons? The style of its chief executive officer, easy money and political pressure.

Style: Mr Lagardere has always had more confidence in his intuition than in figure analysis. His first commandment: the success of a company is based on the enthusiasm of its teams. This enthusiasm must be fueled by a perpetual exhortation to compete and the affirmation of the company's superiority over its competitors. This commando style, which brought him huge prestige with the engineers of MATRA itself, did not work well with the personnel of the new subsidiaries, less qualified on the average, less well paid and worried about rationalizations.

Show

Another trait of Mr Lagardere's character backfired: his reluctance to punish failure. Sentimentality? Recognition of the right to make mistakes? Too

much respect for decentralization? At any rate, the head of MATRA took his time before getting rid of those who were responsible for certain failures. His "one-man show" also prevented the constitution of a pool of potential managers. This is verified now that things have been taken in hand again: 5 of the 10 present branch heads were hired from outside.

Money: MATRA, whose military profits were going from record to record, was all the more convinced that it was buying bargains as it was paying with its own stock, then at rates that had never been reached before. In 1980, for instance, it just increased its stock from 269,000 to 305,000 shares to pay for FF 400 million's worth of contributions. The true bill came later on.

Politics: fascinated by the Japanese model, the government believed that the emergence of new competitors would give added dynamism to Thomson and the General Electricity Company, the two large groups on which French electronics status had been based until then. "Implicitly, MATRA was appointed to egg them on. It was the State that, with promises of markets and subsidies, asked it to become a leader in watchmaking, automobile electronics, components, telephone," a high official analyzed.

Obviously, Mr Lagardere did not just sit back and watch when his subsidiary got into trouble. As we saw, new men were recruited. Structures were simplified: MATRA Watchmaking (formerly Jaz) and Uti merged into MATRA Watchmaking; Temat and Telephone Picart-Lebas merged to form MATRA Communications; Interelec may end up merging into MATRA Transport. The organization chart was redesigned: each branch is from now on fully responsible for its exports and marketing, two functions which they previously shared with the holding company. Cessions took place: the interest held in CIMT [Industrial Transport Equipment Company], a railroad equipment manufacturer, was sold to Alsthom. Agreements were signed: with Renault for computer-aided design (Datavision); with Norsk Data for data processing; with the U.S. Havco for printed circuits. Rationalizations transformed the production apparatus; they were accompanied by unavoidable layoffs.

Will this be enough to restore MATRA to its position among high-performance companies? First, note that the group has always made a profit in spite of the losses of its subsidiaries. This, naturally, was due to exceptional profits in the military sector. But, precisely, the military sector has now become somewhat of a worry: the contract received by the parent company in 1984 did not boost its backlog of orders, which had decreased considerably in 1983. MATRA hopes that its new weapons generation will stimulate its sales starting in 1986. In the meanwhile, still for the parent company, sales will be helped to a certain extent by the excellent workload of the space sector.

Subsidiaries, for their part, are the subject of much uncertainty. While telecommunications and automobile electronics are recovering, transports (lacking orders) and automation (sizeable risks to be assumed to launch the next robot generations) are facing great difficulties. As for electronic components, in the middle of their development stage, 20 years of disappointing public "plans" are there to show that the rage to conquer is not

enough to win. This is also true of data processing, where the group is competing both in microcomputers and in engineers' work stations. Many efforts will also be required to provide new impetus for the defense operations of Manurhin, which is now in the middle of industrial reorganization: will the Apilas, a small bazooka whose development cost FF 200 million, find buyers?

Challenges

Mr Lagardere almost seems to enjoy having to face so many challenges. Yet, we may wonder whether he has completed the reorganization of his company. In his new organization, his operations are classified into three categories: first, military and space, then, components, data processing, telecommunications and robotics; finally, cars, automobile electronics, watchmaking and transports.

Is that a way of saying that the group may not stay involved forever in operations classified in the third category? After all, the operating contract signed with Mr Charles Hernu in November 1983 hinted at a MATRA consisting of only three poles: military, space and components.

Through MATRA's recent history, both the qualities and shortcomings of dynamic French companies become apparent. Qualities: energy and ambition. Shortcomings: superiority complex, autocracy, fascination with fads, and incest with the State.

This explosive mixture will sometimes send sparks flying. At other times, it will produce time-bombs.

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SCIENTIFIC AND INDUSTRIAL POLICY

VENTURE CAPITAL COMPANIES TAKE OFF IN FINLAND

Helsinki HELSINGIN SANOMAT in Finnish 22 Jan 85 p 23

[Article by Heikki Arola: "Arrival of Development Companies"]

[Text] Inspired by examples in foreign countries, a group of new investment companies, which have declared their desire to invest in small dynamic firms, burst upon the scene in Finland last year. Nevertheless, there is no fear that the prices of good small firms would begin to increase. Supply and demand are in balance. Small entrepreneurs are demanding outside risk money more readily than before.

In addition to the new private development companies, two companies began operations in Southern Finland with the support of the Trade and Industry Ministry, the Area Development Fund established two companies further to the north in Finland in the previous year already, and a group of area, municipal, or otherwise local development companies was created also either with or without capital stock.

A development company is not the same as an investment company even though the concepts are often confused. An investment company generally acquires stock from large financially well-established companies and its role as a stockholder is passive. A development company finds small growing firms and actively participates in the development of the firm. The risk is greater, but there are also opportunities for profit if the venture is successful.

Primarily three different types of companies are being created in Finland under the name of development company.

The first type is comprised of companies like Sponsor and Mancon, which function completely according to commercial principles.

Public

Then there are the partially public funded development companies, which include general industrial policy and area policy views, but the objective is also economic viability and profit.

The third type includes local companies operating in a limited area and the experience gained from them in Finland as well as elsewhere is conflicting. The decision has been made in the ministry that it will, for the time being, keep its hands off these ventures.

Local companies which do not invest money, but direct various projects make up yet another group. Come cities have such companies and they can be useful as a tool of the municipal bureaucracy. This is the evaluation of at least Assistant Section Chief Olavi Anko of the Trade and Industry Ministry's Small Industry Office.

To date the state has invested a little less than 20 million markkaa in its own development companies.

The Area Development Fund has invested 5 million markkaa each in its two development companies, Keraspo and Lakespo. Pikespo and Ifecon, which have been established in Pirkanmaa and Kymenlaakso, were each allocated 1.5 million markkaa in last year's budget and they have been promised an additional 2.5 million this year.

Cautiously

The approach has been cautious, but the investment is growing gradually. The goal is a capital stock of 20--25 million markkaa at the time the companies begin full-scale operations or after a few years. The aim is to have the state contribute approximately half of the amount, about 20 million.

The rest will come from wherever it will come. Anko says that the acquisition of the remainder of the capital stock is completely a matter of the company itself and a decision of its board of directors. In Pikespo, for example, local municipalities in Pirkanmaa are involved with a small contribution along with the investments of the Industrialization Fund, the banks, and the insurance companies. The goal is the same in Kymenlaakso's Ifecon, but there the banks have initially designated a share which will later be transferred to the municipalities.

In the final form the state will thus own nearly half of the stock, but, anyway, less than half. The Trade and Industry Ministry also assumes that the municipalities will not be the majority owners of the companies. This is one way of ensuring that they will not be any erosion of their commercial and economic objectives.

Who then will have the authority in a development company supported by the public sector? According to Anko, it will not belong to any one of the owners, but to the companies board of directors and general manager. "The premise is that the acting management will be provided with the conditions to make the company profitable and a certain state of equilibrium will prevail among the owners.

4--5 Years

According to the objective of the KTM [Trade and Industry Ministry], the funding for the initial start-up phase should be ready in 4--5 years. After that, the company must make it on its own, even profitably.

What are the actual chances of the development companies? Is there confidence in them or are they whims of current fashion? In Sweden where dozens of development companies have appeared in recent years, many have quietly gone into bankruptcy.

All the opportunities for success as well as for failure exist in Anko's opinion. But if a company has expert promoters, a development company will be able to operate according to experience and the risks will be reasonably estimable.

In addition to Sweden, examples of warning can be found elsewhere. In Anko's opinion a development company should avoid entering into the rescue operations of another company. It should also not proceed to develop a company merely around a product idea. The distance from an idea to a profitable enterprise may be too long.

When seeking shares from even promising enterprises in Anko's opinion one must remember that expectations become a reality only after many years and the chances of such an enterprise paying out dividends in the beginning are small.

Pressures

While failures are still evident in the beginning, pressures to replace a managing director can be great during the first years of operation. There is no cause for the drawing of excessively quick conclusions, states Anko.

Are there two series of development companies being created in the country now? Privately owned companies which select the best small firms for their protection, and publicly supported companies which will more or less become social welfare offices of the corporate world?

Anko does not believe in the creation of such a division. "Public development companies cannot afford to put their money in poorly managed companies and their relationship with their own companies does not differ from the private companies. They are all stock corporations.

True, the state does not set the same rigid profit demands for capital as the private sector does, and it is doubtful that the municipalities will expect greater dividends. But this less rigid attitude is not decisive from the point of view of a company's success in Anko's opinion.

The state will be cautious in dealing with its own development companies. There are no plans for any new companies in addition to the two that have already been established and there is probably no need for any others in the future since Pikespo and Ifecon have been planned as nationwide development

companies even though they will initially be concentrated in their own economic areas. After a few years, all of Western Finland will be designated as Pikespo's territory and Ifecon will scour Eastern Finland.

Most Important Development Companies

Company	Capital Stock in Millions of Markkaa	OWNERS	Investment Companies	Whose Total Turnover in Mmk is:
Sponsor	96	Spontel, Team-Keskus, Industrialization Fund, KOP, PSP, OKO, SYP, Otso, HOP, Beijerinvest, Sampo, Auramo	13	200
Spontel	145 will increase to 185	Sponsor, Beijerinvest, KOP, Land and Water Engineering Support, OKO, Otso, Pohjola, Poyry, SYP, SYP-invest, Sampo, Varma, Patria, Sefe, Bensow	1	230
Mancon	25.8 will increase to 35.8	Gustaf Rosenlew, Samerka, SKOP, Haka, PPTH, Sampo, Ilmarinen, Talcons, Bertel Ekengren	42	
Expaco	21	HOP, Sampo, Partek, Bensow, Dynamic Investments	4	17
Finvest	40	SYP, Pohjola, SOK, Polar, Instrumentarium, Mec-Rastor	--	--
Patron	6.5 goal 26	Farmos, OKO, Puolimatka, Sampo, TS-Group, Turun OP, Alandsbanken	--	--
Pikespo	3.5	State, Industrialization Fund, Pirkanmaa Provincial Union, Tampere Area Savings Bank, T.S.Coop Bank, STS, Sampo, Varma, Turva, Pohjola	--	--
Ifecon	3.5	State, Industrialization Fund, Tapiola, Kyme's Savvings Bank Association and Coop Bank Union, Lappeenranta Coop Bank and Savings Bank, STS	--	
Keraspo	8	Kera	9	60
Lakespo	4.5	Kera	13	25

Development companies are already by their premises suitable for overall industrial policy goals inasmuch as their task is to find growing new-technology

companies which will promote exports. Firms which have found stable markets do not interest the development companies.

Different types of development companies will appear in the country rather quickly even in the future, believes Anko. For example, large enterprises will establish their own development companies in the future to handle new ideas which would otherwise be ignored in large organizations.

"Winning of Trust is Difficult"

"The Finnish businessman is by nature suspicious. The winning of his trust will take many years," says Managing Director Seppo Collander of Mancon, a development company which keeps its headquarters in Pori.

Apparently, Collander knows, however, how trust can be gained in the final count, since Mancon has grown quickly in that it has more than 40 client companies and is offering a stock issue for which a certain oversubscription was already predicted in advance.

When Collander went to tell Helsinki's stockbrokers about the company a couple weeks ago, a banker handling the stock issue praised Mancon as Finland's only real development company. What is the basis for such a statement?

According to Collander, the statement is based on the fact that the pioneer in this field in Finland, Sponsor/Spontel, is becoming more of an investment company than a development company as it acquires minority shares. Nevertheless, Collander is grateful for Sponsor's pioneering work, from which Mancon has gained knowledge. Sponsor was established in 1968, 10 years before Mancon.

In some ways Collander considers the prevailing interest in development companies to be fashionable and a reflection from Sweden where the phenomenon began approximately 2 years ago. Now nearly any business of consequence in Finland is involved in development companies.

If this enthusiasm remains within a certain framework, only good things can be said about it in Collander's opinion. The development company is a new kind of tool for industrial development in Finland. It is a means by which large businesses, banks and individuals can make risk investments in small companies in which a direct involvement would otherwise be impossible.

A development company such as Mancon cannot conduct business in just a crude business sense in the opinion of its managing director. Mancon is also influenced by a certain ideological fire: the company feels it is benefiting all of industry by promoting, among other things, the internationalization of small industry. All the other development companies say they are aspiring to the same thing.

Collander sees a special national benefit to Mancon's reorganization activity, which is separate from its actual development work.

Mancon has established the Deveman Company for its reorganization work. It comes into the picture when a small business, which is in itself capable of functioning, is tottering on the brink of bankruptcy because of funding difficulties and the bank has begun to collect overdue payments.

A Buffer Company

Normally, such a business in Finland would also declare bankruptcy, but with risk funding Deveman can become a buffer between the company and the bank and and pull the company out of the red. Through the intervention of Deveman, Mancon has been involved in dozens of such operations and has failed in only one case.

One of the companies subject to reorganization was Finnmekano in Teijo, which was subsequently divided into five sections which are operating under the protection of Mancon. Finnmekano is an exception in that firms put back on their feet generally remain under their original owners and as compensation Deveman receives a certain portion of the firm's profits within a mutually agreed upon time limit.

Deveman becomes involved in rescue operations generally at the request of a bank and always with the consent of the company in question.

This kind of reorganization work in Collander's opinion is an interesting area when one considers the future. The only problem is to find competent personnel to take charge since reorganization work is more difficult than the managing of a normal business according to Collander. Deveman is now being guided by Leo Kosonen, who came from the Huurre Company.

Idea from Tuominen

Mancon owes the idea of a reorganization firm to Postal Bank Director Heikki Tuominen, who at one time yearned for a business sanitarium in Finland for healthy firms struggling with a shortage of money. Mancon made the idea a reality, but in its own way.

The overall sales turnover of businesses directed by Mancon is now 440 million, but one can already add 50 million to this since Mancon has just concluded a preliminary agreement for the purchase of a Swedish firm of this size. The procured firm is a market leader in the world in its own narrow field, but Collander does not want to reveal what field is in question. Then it would be easy to guess even the name of the firm.

In Finland Mancon has a company, the Nasi Kiviteollisuus Company, which has 55 percent of the world's markets even though the firm's sales is less than 10 million. The procurement of a leading company in a narrow field of business can be one of the strategies of a development company. Another possibility is to organize whole areas, to which Sponsor has striven.

Master of the House

In general, the entrepreneur who has founded a firm wants to remain the boss even after a development company has become involved in its management. In such a case, Mancon strives for approximately 45 percent of the stock and the board of directors will include two representatives from Mancon and two from the company in question. The fifth member is an outside expert. "The board of directors is a company's best consultant," philosophizes Collander.

Mancon has not had to seek out companies for many years now. They are now being offered, on the average of one a day. And Expaco, for example, selected its first four companies out of 90 candidates, among which it estimated one-third is ripe for reorganization.

Mancon has divided its company into nine areas, each of which has its own director. This number of personnel is capable of producing an even greater turnover in his opinion. He refers to Sweden's Hexacon, which exceeds a turnover of a couple billion kronor with the same size organization.

Mancon concludes a 5-year contract with a business, after which a decision is made whether to sell the stock back to the owner, to someone else, or whether to stay in the company. Mancon's first companies are now beginning to become ripe for sale. So far contracts have expired on two companies: Mancon acquired majority control of one and extended the contract of the other for another 5 years.

A tenth of the acquisitions turns out to be a mistake and they are either abandoned or merged into another company. "It is not our intent to bring down companies, this would not really suit our operational image," assures Collander.

Sponsor and Spontel

Among the development companies, Sponsor and Spontel own each other, and according to Managing Director Jan Boethius of Spontel, there will be a clear division of labor between the two companies in the future: Sponsor will promote only majority partnerships and Spontel minority partnerships. Neither one of them is interested in the very smallest firms. Spontel will not become involved in firms with a sales turnover of less than 50 million and Sponsor's threshold is 30 million.

According to Boethius, in Finland there are many medium size companies in which the owner does not want to give up control and, therefore, a minority partnership is the only possibility. Nevertheless, Boethius indisputably classifies Spontel as a development company. In his opinion, a 20-percent partnership is the line which separates a development company from an investment company. And Spontel always concludes a development agreement with a firm.

Boethius classifies Mancon as a pure American type "venture capital" company, which makes risk investments in small firms. He considers Sponsor/Spontel

as a traditional Swedish type development company, which is interested in more stable companies.

Mancon has announced that it will concentrate on three areas in the future: plastics, free-time, and hydraulic and pneumatic enterprises. Expaco has begun to invest in mechatronics, machinery which is operated with electronic guidance systems.

Service Enterprises

Generally, development companies are interested in industry, but Patron, which was established in Turku, is also interested in service enterprises. "Any service enterprise which has the capacity to grow is acceptable," says Teppo Korte, Patron's chairman of the board. And preliminary scouring has revealed that such enterprises exist in the Turku area, from which Patron will begin and subsequently expand operations throughout the whole country.

Patron has announced that it is only aiming at minority partnerships in four or five enterprises initially.

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SCIENTIFIC AND INDUSTRIAL POLICY

VENTURE CAPITAL FUNDS THOMSON-ALCATEL OPTICAL DISK PROJECT

Paris L'USINE NOUVELLE in French 13 Dec 84 p 25

[Article by Eric Walther: "Alcatel-Thomson Ventures With Venture Capital"]

> [Text] With more rapidity and flexibility than it had ever shown before, Alcatel-Thomson just set up a joint venture on the optical disk market. But competition is already tough.

By setting up a joint-venture type operation around Alcatel-Thomson Gigadisc (ATG), the new French electronics pole is displaying astounding flexibility.

In 1979, Thomson-CSF (in collaboration with Shugart, a Xerox subsidiary) launched a digital optical disk project. But, after running through FF 100 million, including 39 in subsidies, the project was in danger of getting short-winded. Thomson's financial problems, the confusion resulting from its rapprochement with CGE [General Electricity Company] last year, via CIT-Alcatel, were actually not encouraging it to launch this operation.

The Gigadisc team constituted around Pierre Brouvel, formerly with Prime France, decided to go it alone. Its goals: to collect the funds required to continue building the Toulouse industrial facility, which was getting behind schedule, and to set up marketing structures commensurate with its ambitions (FF 1 billion in sales in 1988, including 95 percent from exports).

They won the first part of their challenge: the current financial operation will bring FF 200 million to Alcatel-Thomson Gigadisc, half of it in the form of equity stock. Thomson Telecommunications (32 percent of the stock), CIT-Alcatel and Thomson-CSF (each 10 percent) will retain a majority interest in the venture. The rest of the stock is distributed between Bull and Rhone-Poulenc Systems (5 and 2 percent)--which, although they are minority shareholders, will have a seat on the board for obvious strategic and technical reasons--plus 7 other financial partners, all of which are also minority shareholders; the other half consists of state aids (FF 40 billion in subsidies from the General Directorate of Telecommunications, and FF 30 million in loans from the Industrial Modernization Fund) and traditional loans amounting to FF 30 million.

ATG must now prove itself. With only two products in its catalog (the reader and the disk, medium-priced), the firm is preparing today tomorrow's products (mass storage with a "juke-box" capable of handling several disks, reversible system that could read or record at will, etc.). ATG is well placed in Europe, where its only rival is Philips, which is allied to Control Data, but on the other hand it will have a hard time getting the better of U.S. start-ups and, in particular, all major Japanese data-processing companies.

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SCIENTIFIC AND INDUSTRIAL POLICY

MORE JAPANESE INVESTMENT IN FRANCE SPURRED BY PROTECTIONISM

Paris L'USINE NOUVELLE in French 13 Dec 84 pp 23-23

[Article by Georges Le Gall: "Japanese Investments Stake on France"]

[Text] "Made in France"... but of Japanese origin. The trend is accentuating: restricted in their direct exports, the Japanese are developing production in France.

Will Ernault-Somua, which just filed for bankruptcy, be taken over by Toyota? Obviously, 1984 confirmed France's opening to Japanese investments and cooperation with Japanese companies. The most spectacular illustration of this was Sumitomo's takeover of Dunlop; but Seiko also acquired an interest in MATRA Watch-Making [Mechanics, Aviation and Traction Company], Honda in the "motor" subsidiary of Peugeot Cycles, Yamaha in MBK-Motobecane [expansion unknown], etc.

In 1982, Japanese investments in France amounted to only FF 352 million; in 1983, they amounted to FF 604 million. The first Japanese factory in France (Yoshida zippers) dates back to 1968; 10 years later, Japanese facilities could still be counted on the fingers of one hand. But they are now 25. Recent as it may be, the acceleration is nonetheless considerable.

Why? Because it is in the best interest of the two parties and because they both want it. "Necessity is compelling: as protectionism rises, the Japanese are becoming aware that there are limits to direct exports, and that they must manufacture abroad, and therefore invest there," Andre Aumage, head of the Indosuez Japanese office, pointed out. As for the French government, it has understood that protectionism, too, had its limits: products are circulating freely in the Common Market; there is no point in keeping the Japanese out if they manufacture in Germany, Great-Britain, etc., as we would just be accumulating drawbacks with respect to both the trade balance and employment.

Francois Mitterrand's 1982 trip represented a symbolic turn: he was the first president of the French Republic to go to Japan; concrete realizations followed. In 1982, too, the CNPF [National Council of French Employers] and the Keidanren (its Japanese counterpart) set up the M2 committee (after the initials of the two chairmen: Akio Morita, president of Sony, and Jacques Machizaud, former president of Roussel-Uclaf). The M2 committee meets every

Japanese Production Investments in France (As of October 1984) (continued)

Japanese Parent Company	French Corporate Name	Year	Operations	Japanese-Held Stock (Percent)	Partners	Personnel	Site
JMA	JMA Consultants Europe	1984	Consultants	100		30	Paris
Sumitomo	Dunlop France	1984	Tires			3,500	Montlucon, Amiens, etc.
Stanley	Idess	1984	Liquid-crystal instrument panels	31	Renault (45%) Jaeger (19%) Dreyfus Bank (5%)	200	Le Bourget-du-Lac (Savoie)
Alfa Techno		1984	Quick-set adhesives	50	Rousselot Production	50	Ibos (Htes-Pyr.)
Trio Kenwood		1984	Tuners and stereo systems	50	Delta-Dore & SDR*	75	Janze (Rennes)
Daiwa		1984	Fishing rods	100		145	St-Etienne-du-Rouvray
Astre Deco		1984	Decorative panels	100		100	Carcassonne
Canon		1984	Electronic typewriters	100		140	Liffre
Akai		1984	Videotape recorders			300	Honfleur

Sources: Directorate of National Development and Regional Action and L'USINE NOUVELLE

[* Regional Development Company]

Japanese Production Investments in France (As of October 1984)

Japanese Parent Company	French Corporate Name	Year	Operations	Japanese-Held Stock (Percent)	Partners	Personnel	Site
Yoshida KK	YKK	1968	Zippers	100		300	Lille
Pentel	Pentel France	1970	Felt pens	100		50	Bry-sur-Marne
Ajinomoto	Eurolysine	1976	Lysine	50	Lafarge-Coppee	260	Amiens
Dai Nippon	Nordic SA Georget	1978 1980	Plastics Printing inks	49 35	Normetex Ripolin	250	Nantes
Sony	Sony France	1980	Magnetic tape	100		400	Bayonne
Akai	Akai France	1982	Tuners and VCRs	100		200	Honfleur
Sony	Sony France	1982	Video-cassettes	100		450	Pontonx (Dax)
Toray	Soficar	1982	Carbon fibers	35	Elf-Aquitaine & Pechiney (65 %)	180	Abidos (Pau)
Unitec	Dicorop	1982	JVC audiovis.prod.	50	Dicorop	150	Cannes
Toyo Aluminum	Alcan Toyo Europe	1982	Aluminum products	50	AA France	50	Accous (Pyr.-Atl.)
Clarion	Clarion	1983	Auto radios	51	M. Bessis	200	Pompey
Pioneer	Pioneer France SA	1983	Speaker systems	70	M. Setton	80	Cestas (Bordeaux)
Canon	Canon Bretagne	1983	Photocopiers	100		180	Liffre (Rennes)
Suntory	Chateau-Lagrange	1983	Vineyard	100		50	Medoc
Sagami Gum	Radiatex (take-over)	1983	Hygiene products	100	Radiatex Laboratories	60	Vichy

year in Tokyo or in Paris. "We must know and talk to one another, create a new climate in spite of commercial differences," Pierre Maneval, CNPF director delegate to foreign trade, indicated.

Projected Facilities Examined Individually

In 1984, the DATAR (Delegation to National Development and Regional Action) opened an office in Tokyo and, in 1984, in Osaka. During her trip, last October, Edith Cresson, minister of industrial redeployment and foreign trade, told the Japanese: "We are ready to consider all your investment applications. But we cannot say yes or no right away. In each case, we must examine the content of your proposals with respect to technology contributions, added value, job creation and the volume reexported from your French factories."

Where do we stand today? Jacques Hebrard, DATAR delegate in Japan, answered: "Only two years ago, France came behind Germany, Great-Britain, Spain, the Netherlands and Belgium, and just ahead of Italy as far as the number of Japanese production facilities in Europe is concerned. At the end of 1984, we rank third, behind Great-Britain (34 facilities), Germany (30) and ahead of Spain (21). For 1985-1986, we have 20 projects or so; and in 1985 we could well rank second, behind Great-Britain and ahead of Germany."

If Japanese did not invest much in France, the French invested still less in Japan: their 1983 investments did not exceed FF 107 million. But, there too, progress is becoming evident. Thus, the Lyons Water Company just set up a joint venture in Japan between its Degremont subsidiary, specializing in water processing, and the corresponding division of the Japanese DIC [expansion unknown].

Exchanging Technologies and Market Shares

Agreements of that type could proliferate, both ways. "We must exchange technologies and market shares," according to Jean de Menton, representative of the Ministry of Industrial Redeployment (who, following conferences with manufacturers, bankers and government officials, just wrote a report entitled "How to meet the Japanese challenge").

"Each of us must think and make efforts to promote cooperation in sectors in which our two industries are complementary," Masatoshi Watanabe, general director of the Bank of Tokyo in Paris and president of the Japanese Chamber of Commerce and Industry in France, confirmed. Prospects are not restricted to large companies. Thus, in its 1984 survey, the JETRO (Japan External Trade Organization) listed 23 small or medium-size Japanese firms which mentioned France as one of the countries in which they might want to invest.

It is true that Japanese investments can benefit us as far as employment and foreign trade are concerned. Yves Ragougneau, chief executive officer of Sony France, pointed out in this respect: "We are now employing 850 people, and we shall employ over 1,000 one year from now. Exports account for 85 percent of the production of our Bayonne factory; and that proportion will reach 90 percent at our Dax factory..."

Despite their recent development, Japanese investments in France and in Europe must still be seen in their true proportions: they are not equal to trade deficits with Japan (FF 13 billion per year for France, and $12 billion for the common market as a whole). Compared with 1980, the overall Japanese investments abroad have doubled, reaching now some $70 billion; but the share of Europe remains modest: 14 percent, compared with 68 percent for the United States and Southeast Asian countries.

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SCIENTIFIC AND INDUSTRIAL POLICY

EEC APPROVES $900 MILLION RESEARCH FUNDS FOR NEXT 5 YEARS

Paris AFP SCIENCES in French 20 Dec 84 pp 1, 2

[Article: "EEC: 1.2 Billion Ecus For Community Research"]

[Text] Brussels—The European Community will devote 1.225 billion ecus [European currency units] ($882 million) to community research during the next 4-5years, it was announced late on 19 December by Mr John Bruton, Irish minister of industry, who chaired the meeting.

After a conference that lasted over 9 hours, the EEC research ministers agreed on a budget for pluriannual research programs in the fields of biotechnology, thermonuclear fusion, non-nuclear energies and radioactive wastes, to name only a few.

The initial amount, however, is subject to mid-term revision should the amounts allocated to certain research operations prove too small.

Financing will be provided for the following programs:

- 690 million ecus over 5 years (including 342 million over 2 years) for a thermonuclear fusion program, including the JET (Joint European Torus) installed in Culham (Great-Britain) and designed to research controlled thermonuclear fusion, and national programs.

- 120 million ecus over 5 years (including 70 million over 2 years) for a radioprotection and nuclear-waste decontamination-site program in the EEC.

- 55 million ecus over 5 years (including 35 million over 2 years) for a biotechnology program.

- 125 million ecus over 4 years (including 65 million over 2 years) for a "Brite" incentive program for small industrial programs integrating advanced technologies in traditional manufacturing processes.

- 175 million over 4 years (including 95 over 2 years) for the development of non-nuclear energy in countries that do not ambition to become nuclear industry leaders (Netherlands, Ireland, Italy, Greece, Denmark).

- 60 million ecus over 4 years (including 35 million over 2 years) for programs to stimulate cooperation and scientific exchanges.

It was finally decided that the eighth program, dealing with reactor safety, would be financed as part of the joint research center of the EEC in Ispra (Italy), which will receive funds amounting to 700 million ecus over 5 years.

The overall budget on which the Ten agreed does not cover previously adopted research programs, like ESPRIT [European Strategic Program for Research and Development in Information Technology] to which 750 million ecus will be allocated during the period 1984-1989. The Ten also gave the green light to the working program of the ESPRIT project for 1985.

Concerning construction of the European synchrotron, whose cost is estimated at about FF 1 billion, the Ten merely exchanged views. The French minister of research, Mr Hubert Curien, indicated that final decisions on the financing and site of the synchrotron, in which other European countries besides the EEC are involved, would be made during the first quarter of 1985.

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SCIENTIFIC AND INDUSTRIAL POLICY

NETHERLANDS MINISTER CALLS FOR EEC TALKS ON HIGH-TECH DUTIES

The Hague ANP NEWS BULLETIN in English 12 Feb 85 p 2

[Text] Brussels, February 12--Prime Minister Ruud Lubbers has invited the European Commission to take part in a discussion about chances to promote European technological development, Foreign Affairs State Secretary Wim van Eekelen said here last night.

Van Eekelen said the Dutch Prime Minister hoped to hold the talks, along with several of his ministers, within one month. He said commission chairman Jacques Delors and several other commissioners had been invited.

During the last European summit in Dublin in December, Lubbers entered a plea to give the EEC more opportunities for technological development.

Van Eekelen said the Dutch government now hoped to approach the matter in the light of three prerequisites: the development of the technology itself, improving the machinations of the European market and what the State Secretary called "the external aspect".

Van Eekelen explained this last prerequisite by saying that the possible changing or raising of Europe import duties for certain imported high-tech products was to be considered.

Protectionism

"We will of course then be accused of protectionism, but the point is whether Europe intends to have and maintain a 'spearhead industry,'" he said.

The State Secretary said Holland also hoped to have any conclusions resulting from the discussion with the European Commission included in the preparation for the next European summit, to be held here on March 30 and 31.

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SCIENTIFIC AND INDUSTRIAL POLICY

EEC LAUNCHES 'BRITE' PROGRAM FOR INDUSTRIAL TECHNOLOGIES

Brussels LE SOIR in French 15 Feb 85 pp 1, 7

[Article by Jacques Poncin: "BRITE: A European Industrial ESPRIT"]

> [Text] The European Community Commission just issued a first invitation to industrial and university researchers, to apply for participation in a vast technological research program known as BRITE, i.e. "Basic Research on Industrial Technologies for Europe," a program inspired by the same philosophy as ESPRIT, but aimed at sectors other than data processing.
>
> The goal is to make sure that our industry retains an adequate competitive edge worldwide in priority sectors.

Like it or not, ESPRIT (European Strategic Program for Research and Development in Information Technology) has made a difference in the landscape of industrial and scientific relations on the Old Continent. Although it is far too soon to assess its tangible results (the program hardly started and will last five years), it can already be credited with succeeding in bringing together manufacturers and university researchers from various countries.

Thus to break actual or psychological barriers (languages, mentalities, trade competition, etc.) is undeniably a success for ESPRIT and BRITE should be seen as an operation of the same kind.

It all began with an "invitation to show interest," i.e. an invitation sent to manufacturers to meet with European experts and select a few well-defined sectors where there is a gap to fill, where research of a "precompetitive" nature would be appropriate (i.e. research that would not directly lead to the development of a marketable product) in order to keep our industry at the same level of competence as its best competitors worldwide, to restore its competitive edge or, better, give it a significant lead.

Now that these "critical" sectors have been defined, the European Commission is going on to the second stage, i.e. an invitation to candidates who must be groups of manufacturers and researchers and must come from several EEC countries. It is out of the question, therefore, to finance purely academic

research or to aid some isolated research carried out by a single team: this is the ESPRIT philosophy par excellence.

Automated Sewing

What are the themes selected? They fall under two headings. The first has to do with technological developments, the second with "new productions adapted to products manufactured out of flexible materials," or, to put it more simply, a new way of looking at the textile industry.

The first heading covers research on product wear, reliability and deterioration (how to study and prevent friction, corrosion, etc.; how to treat surfaces, etc.); on metal fabrication, especially with lasers; on new assembly methods, for instance by bonding; on testing, especially computer-aided testing; on how to reduce the cost of computer-aided design, in the hope of making it affordable to small firms; on new materials with very special properties, especially in optics and electronics; on filtering membrane technology; and on catalysts, both for their uses in fine chemicals production and in effluent purification.

The second heading covers the textile industry and, to summarize roughly, we can say that the goal is to automate sewing processes and, if possible, to develop machines which, using a computer-designed pattern, would cut fabrics and assemble garment parts in "three dimensions."

Candidates should, in principle, apply before 30 April. The total cost of the program should amount to some 11 billion Belgian francs, half of which coming from the EEC budget and the rest being contributed by the participating industries.

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SCIENTIFIC AND INDUSTRIAL POLICY

STUDY SHOWS UK R&D SPENDING DOWN, SCIENTISTS LEAVING

Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German
25 Jan 85 p 2

[Article: "British Industry Has Reduced Research--More and More Competent Scientists and Engineers Go Abroad"]

[Text] I.H. London. More and more competent British scientists and engineers are going abroad where they encounter substantially better working conditions and also are better paid. As shown by a new investigation on the part of the British Ministry of Trade and Industry developments in recent years offer much ground for concern.

Between 1981 and 1983 Britain's industry did increase its research and development expenditures nominally by a tenth up to a total of 4.2 billion pounds (16.4 billion DM at the present rate of exchange). But at the same time costs have risen by more than 16 percent. Thus in reality there has been a distinct regression. At the same time enterprises in private industry, which conduct 87 percent of all research and development (alongside institutions and state-run operations (at least appear not to have carried out economies "at the core." In 1983 the number of scientists and engineers employed was the same as in 1981; about 77,000. But they had less auxiliary personnel than 2 years before. Moreover, the 75 industrial enterprises of private industry investigated in the study, who engage in over 80 percent of the total research outlay for industrial projects in Britain, have paid less in wages and salaries to their research and development personnel than was paid to British industrial employees on the average in the 2-year period. Altogether 186 [sic] persons were active in 1983 in the area of industrial research and development.

At 63 percent industry financed the lion's share of the expenditures. The government funded about 30 percent while contributions from abroad for domestic research expenditures by industry dropped to 7 percent.

Calculated in real terms Britain's industry expended in 1983 just as much as it had expended 5 years before in the area of research and development. A number of branches of industry, such as general and electrical machine construction and the aircraft and space industries, have even reduced their efforts in this respect since 1978. In places this reduction has been substantial, for example, in electrical machine construction (excluding electronics)

where there has been a reduction quantitatively by one-third. In 1983 even the chemical industry spent in real terms somewhat less than it had 5 years before although admittedly this 1983 expenditure was a little bit greater than the money put out for this purpose in 1981.

Unquestionably, the most active in this respect have been the electronics enterprises which in 1983 spent nominally almost 1.4 billion pounds or a third of the total expenditure for industrial research and development. Allowing for inflation that was a fifth greater than in 1978. Overall in recent years the automobile industry, after a brief reduction, has also put more into these efforts; as much as a seventh more between 1981 and 1983, after one excludes the effect of price increases.

The automobile enterprises in Great Britain in 1983 have spent 240 million pounds for research and development. Thus it occupied almost the very bottom of the ranking list among the most important branches of industry. After electronics, the chemical and aeronautical industry occupy the second and third positions in terms of their outlays in this sector.

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SCIENTIFIC AND INDUSTRIAL POLICY

DETAILS ON DUTCH FIRMS, THEIR PROJECTS, FUNDED BY ESPRIT

Rotterdam NRC HANDELSBLAD in Dutch 28 Jan 85 p 14

[Article by NRC HANDELSBLAD editors Zeger Luyendijk and Wubbo Tempel: "Purmerend's Firm the Only Small One Able to Get as Far as Project: ESPRIT Participants Are Large and Established"]

[Text] Rotterdam, 28 January--Almost all of the Dutch participants in the ESPIRT program set up by the European Commission belong to the category "large and established." The only exception is Purmerend's Courseware Europe BV which, with 15 employees, may be called a small firm.

The company is one of the participants in the 104 ESPRIT projects which comprise part of the ambitious attempt by the European Commission to allow Europe to catch up with Japan's and the United States' lead in information technology. The Commission intends that 3.75 billion guilders be spent on research in this area in 5 years. They are making half of that amount available in subsidies.

To be eligible, each project submitted must involve participants from at least two countries on a continuing basis. Last week the first official round of awards amounting to 900 million guilders was announced in Brussels. Three quarters of the 104 projects now funded fall into category A: these are large projects. Smaller studies are taken up in ESPRIT's B division.

Courseware Europe is not only taking part but is also involved in a large, so-called A project. Nor is that all: the initiative for the entire plan originated in the company itself. "I thought it all up myself," director Dr B. Camstra says whenever he is asked how it all came about.

The project in which his company is taking part is supposed to develop intelligent systems to aid users of an information system. To that end, use will be made of artificial intelligence. With the aid of information about a given situation and after finding out the type of user, the computer should be able to make its information more accessible to the user.

The other parties in the Purmerend firm's research program are two Danish software firms, CRI and Dansk Datamatic Center, and the universities of Leeds and Amsterdam. The entire project runs to 30 million guilders, of which half will

thus be provided by the European Commission as a subsidy. Camstra estimates that about 30 percent of the research will be conducted by his firm. He wants to "emphasize" that it is "extremely difficult" for a small firm to participate in ESPRIT since the 50 percent personal contribution represents a difficult threshold to cross. In his opinion, the ESPRIT subsidy regulations could have taken that into account. But Camstra is taking his chances and hopes to earn a position for himself this way in the market for artificial intelligence systems.

After the initial reports from Brussels concerning this round of ESPRIT awards, it appeared that there were more small and unknown Dutch firms among the Dutch participants. The list published by the commission named as Dutch participants the less well known firms Courseware Europe, Memonica, and Silver-Lisco alongside more well known establishments like Philips, Oce--van der Grinten, and the software firm BSO and several universities.

What Courseware Europe is has become known in the meantime, but it is not so simple with the other two unknowns: the administration of the commission does not appear to have been entirely correct. On closer inspection, Memonica is no Dutch concern at all but a Greek one. Silver-Lisco is a software firm in Ireland. So it is still primarily the large and established concerns which are pulling in the projects in the Netherlands.

In order to facilitate cooperation among larger firms, the European Commission set up the ESPRIT program on the idea of "pre-competitive research." That is to say, this research in information technology is not directed so much at the application of knowledge to new products as it is to the common development of information for that purpose. So it will now be possible to see 12 large European telematics concerns take part together in the same research. An important participant in this connection is Philips.

According to Philips it is participating in 17 projects, in 3 of which it is the chief contractor. These projects include research with the German firm Siemens on the development of two kinds of transistor on a single chip; research in the area of advanced computer architecture with AEG-Telefunken, Cii Honeywell Bull in France, the likewise French CGE, and the German Nixdorf; and a study on improving software in industrial automation. Philips is doing this last project with, among others, the Center for Mathematics and Information Technology in Amsterdam.

Eleven of the 17 projects can be called "significant," according to Philips. About 25 million guilders is involved in these 11 projects. All told, Philips will be working with 50 partners in ESPRIT. Not all of the contracts have been signed yet; the final negotiations about them are now taking place.

Oce--van der Grinten, which is concerned with office automation as well as the more traditional copier activities, does not want to discuss the ESPRIT activities yet. But Prof J. W. Bakker, director of the division of information technology for the Center for Mathematics and Information Technology (CWI), a research institute in Amsterdam, is quite communicative. CWI is participating in two of the projects in which Philips is the chief contractor: industrial

software and computer architecture. According to De Bakker, the latter is the largest ESPRIT project: six large industries are taking up the problem in their own way.

CWI will be working with the French CGE, the Irish software firm Cops, the Italian firm Txt, and the University of Passau on the other project. De Bakkers' outline of how this project came into being is illustrative of the birth of other projects. Philips-Netherlands had already been in touch with CWI about the subject, while Philips-Brussels was discussing it with the French CGE. The two partnerships were quickly combined. On the recommendation of the European Commission, an Irish firm, which had submitted a comparable project, was added to the collaboration. When, finally, it turned out that a new manager at the French concern had good contacts with Txt in Italy from his previous job, that contact was also quickly made.

The third project in which CWI is participating, a B and thus smaller project, also involves the Utrecht software firm BSO, the second largest in size in the Netherlands. This project has to do with a plan to program software automatically. That the project is still in an early stage is evident from BSO director R. Rijke's comment that no assignment of tasks has yet been made between CWI and BSO. A "few thousand" per year is involved at BSO for the project during the initial phase.

Americans

One point of controversy has been the participation of four American firms, IBM, AT&T, ITT, and Digital. The relationship with IBM is particularly sensitive: a high EEG official said last week that any greater participation in the projects by IBM would not be acceptable to various governments.

There has not been much reaction from Philips. They "accept" the fact that the Americans have received money, too. According to Philips, the Americans have concerns in Europe and are thus entitled to money. Philips is not afraid of technology leaking away to the United States. The way to protect technology is not by containing it geographically but by registering it with patents. In that way, it can be made available to anyone by issuing licenses.

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SCIENTIFIC AND INDUSTRIAL POLICY

BMFT ADVISER BLASTS FRG FAILURE TO SUPPORT GROWTH INDUSTRIES

Duesseldorf WIRTSCHAFTSWOCHE in German 11 Jan 85 pp 48-53

[Article by Leo A. Nefiodow: "West German Computer Industry: Half-Hearted Commitment"]

[Text] The FRG, as all of Europe, is lagging behind in the field of information and communications industries, and this gap threatens to grow even further compared to the United States and Japan. Leo A. Nefiodow* harshly criticizes present support policy. DIE WIRTSCHAFTSWOCHE puts Nefiodow's theories up for discussion.

There is a widespread tendency in the FRG to play down the industrial shortfall in the new high technologies and to make light of the long-term significance of this lagging behind. Although the share of German computer manufacturers, measured against world-wide sales, has been shrinking for years and in 1984 probably dropped below 2 percent, leading representatives of the industry do not consider the position of domestic computer manufacturers as endangered in any way. True to the motto, "We'll show them," all indications of decline are registered with a deliberate show of lack of concern. And yet, the German share of the world market--based on its own net product--is still declining even more drastically while it was still almost 2 percent in 1983, it dropped below the 1 percent mark in 1984.

The causes for this development lie, in part, with party politicians; most German politicians so far have dealt with questions of new technologies only in a minor way. So far, no one here has considered it necessary to declare a "year of information technology," as was done in Great Britain in 1982. Nor is there an industrial policy comparable to the long-term Japanese actions or to the extensive goals of the French 5-year plan. With the Japanese, who attained numerous great successes in the international market during the last decades, computer technology has been for more than 10 years the core of an expansive, creative and ever more self-assertive technological and economic policy. In Japan, the high-tech field continues to be considered the growth industry

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par excellence. Japanese computer manufacturers, despite a relatively late start, have meanwhile succeeded in catching up with U.S. competition. In a large project to develop the fifth generation of computers, they are even attempting to gain technical leadership in computer development. Should this project succeed, computers will soon master human language to a large extent and will assess the meaning of information, thus forming the core of highly intelligent information, communication and production systems. Industrial nations unable to build such intelligent machines will hardly have a chance then competing with the Japanese as suppliers of manufacturing, information, and communications products.

Among the blatant misguided assessments of the present situation is also the resistance of the trade unions to the promotion and use of information technology. The experience of the United States and Japan clearly contradict the theory that the new technologies automatically destroy jobs. In both countries the new technologies were developed and applied most intensively. It is hardly a coincidence that there were developed the largest number of new jobs, both in absolute and relative terms. In the United States, for example, between 1968 and 1983 more than 25 million new jobs opened up, while in the FRG, during the same time period, one million jobs were lost.

The data processing market represents one of the most important markets of our time with its forceful expansion, latest technology, differentiated structure and its particular methods of production and marketing. The computer industry has become the innovator for many industrial branches because of its high rate of technical progress. Because of its ever broadening fields of application, computer technology is the prerequisite as well as the measuring stick for the productive capacity of industry and public service. It has developed into a cross-section industry--without data processing, no area of industry can be competitive today--and in the future will perform a key function to an even greater extent than today.

Despite this, there is still resistance in the FRG to the insight--accepted as a matter of fact in the United States and Japan--that a significant computer industry is an indispensable prerequisite for our international competitiveness in all markets of information and communications technology. The contradictions resulting from this attitude are obvious, however. Although we have been struggling for years in this country with the problems of unemployment and under-employment, we fail to channel more extensive capital and labor into growth industries. And yet, it is hardly an unknown fact that the high unemployment rate in the FRG has structural causes, as was again emphatically pointed out in the annual assessment of the council of experts on national economic development of 1983/84. Our industrial structure consists increasingly of stagnating or shrinking industries. However, new jobs cannot be created in ailing industries, but only in growing ones. In spite of this, we do not use our available resources in order to gain new growth markets, but rather to subsidize with billions certain industries, service and trade sectors,

--which have probably lost for good their special importance in West Europe, and some of which are shrinking massively (steel, mining, shipbuilding, textiles, railroads);

--which have no growth potential (aviation, customary letter and parcel services, durable consumer goods);

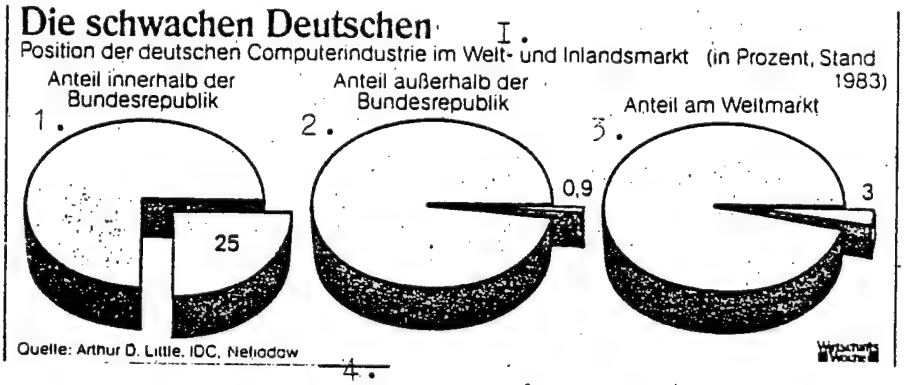
--which produce costly and unnecessary surpluses, such as agriculture and social housing construction.

According to the Hamburg HWWA Institute for Economic Research, since 1978 the large German export industries of chemicals, electrical engineering, and above all, mechanical engineering, have lost above-average market shares worldwide. Studies by the German Bundesbank also showed that the German export share of top technologies between 1972 and 1983 dropped from 26 percent to 17 percent.

But these arguments so far have made little impression on most of the German economic experts. In the mid-80's, when it ought to be clear even to the less progressive elements in the country that things cannot go on as before, private capital in the FRG is still primarily channeled into building ownership models, tax-loss companies and federal bonds. Many German economic experts continue to have almost blind faith in the self-healing qualities of the domestic market. Doubts about this "national religion" are considered sacrilegious, although by now it has become obvious to everyone that, with our system of social market economy in its present form, we did not manage to direct in good time sufficient amounts of capital and labor from old industries into the new growth markets. Investments in the FRG still go primarily to the old "smokestack industries"--into sectors of industry, therefore, which are no longer growing in Europe, consume large quantities of energy, do great damage to our environment, and require raw materials that have become scarce.

While high-rate unemployment here tends to grow further, many formerly important branches of industry are declining, there is general complaining about the lack of economic growth, and domestic firms sit on liquid assets worth billions. But instead of using them innovatively and investing the available funds in new markets, products and jobs, German industry in may ways "still clings in an unhealthy manner to traditional markets," as Klaus Luft, deputy chairman of the board of the Nixdorf Computer AG, expresses it.

In the FRG, not enough capital and labor goes into those industries which are kind to the environment, guarantee secure jobs, require raw materials available in abundance (silicon), and open up real chances of growth. Among them is especially the computer industry, which by the early 90's will be among the largest manufacturing industries of the world.



Key on following page

Key:

I. The Weak Germans
Position of the German Computer Industry in the World and Domestic Markets (in percent, as of 1983)

1. Share within the FRG
2. Share outside the FRG
3. Share in the world market
4. Source: Arthur D. Little, IDC, Nefiodow

A stronger involvement of our industry in the new high-technology markets is also a matter of self-interest of securing their future. The economic structure of a modern industrial state must not be a non-committal side-by-side of branches of industry and factories. It should be an interlocking network system in which individual sectors are so interdependent that they can only exist and grow together. The various branch segments of information and communications technology form such a closely linked industrial chain. In countries without significant high-tech production and development, there can be no future in this field in the long term.

While in the FRG ailing and stagnating industries are still massively subsidized with public funds, the Federal Ministry for Research and Technology (BMFT), for example during the years 1982 and 1983, used less than 0.5 percent of the budget to support the German computer industry. In view of the research and development efforts in the United States and Japan, the funds invested in Germany are hardly more than a drop in the bucket.

Although international competition for the new high-tech markets has already assumed the character of national efforts--as in France, Japan, Brazil, South Korea, Taiwan--, in problems of industrial policy, the FRG persists in betting on the self-healing forces of the market place. The results of this attitude have been:

--that we import many more computer systems than we can export;

--that the German computer industry on its own home ground holds a market share of only 25 percent;

--that in 1983, German computer manufacturers had only a 0.9 percent share of the market outside the FRG with a tendency of rapid decline. In 1984, this share probably dropped below 0.7 percent.

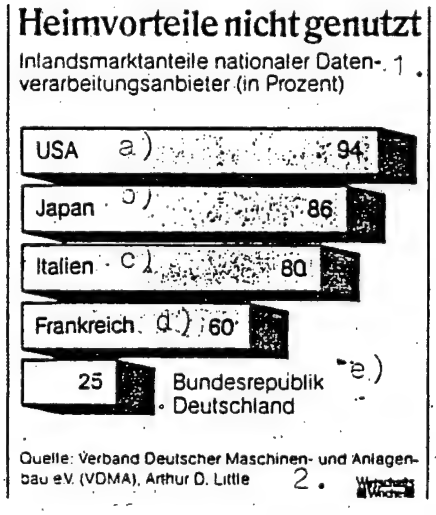
The market share of an industry outside its domestic sales territory is a particularly precise indicator of its international competitiveness. In addition, a large part of the computer systems marketed by German firms, or approximately 50 percent, consist of imported components. The market shares of the German computer industry, based on its own net products, are therefore considerably lower than the values shown in the statistics.

A quantitative comparison of our industrial potential with that of the United States demonstrates the true proportions: In 1984, there were six German computer manufacturers in the FRG with annual revenues of more than DM 100

million (Siemens, Nixdorf, BASF, Kienzle/Mannesmann, Triumph-Adler and AEG/Olympia), while in the United States there were more than 180 firms.

The public is still largely unaware of the fact that the data processing industry in this decade shows the highest growth rates of all the larger branches of industry. For the beginning of the Nineties, a world market of more than $1,000 billion in annual revenue is predicted. By the turn of the century, the information and communications technology in the United States will probably reach 40 percent of the total industrial net product, and at least 20 percent of the GNP.

With every year that passes uselessly because of minimizing or ignoring the situation, the chances for catching up successfully grow dimmer. There is an additional handicap which paralyzes efforts by Germans: they do not possess a broad political consensus regarding the future role of information technology in society. Each new government--sometimes even individual ministers of the same government coalition--try to undo the decisions of their predecessors in part, or even in their entirety. Within a period of very few years, plans are thrown out and new focal points are defined. Up to now, our efforts were too short-term, too superficial, too unsystematic and in part even contradictory. For example, one should compare the splintered support programs and changing concepts in the FRG with the long-range goals and consistent strategies of the Japanese government. The attitude of European industry, characterized in this field primarily by skepticism and "going it alone," makes it difficult vis-a-vis the clear will of the Japanese for market expansion--even at the price of sacrificing quick profits.



II. Key:

II. Advantages of Domestic Market Not Used

1. Share in domestic markets of national data processing suppliers

a) USA
b) Japan
c) Italy
d) France
e) FRG

2. Source: Association of Mechanical Engineering and Works Construction e.V. (VDMA), Arthur D. Little

Through a one-sided, anti-industrial direction, today's criticism largely misses the point with regard to the ecological and economic opportunities of the new technologies. The fairy tale that the new technologies would automatically destroy jobs continues to be told and believed. In shortsighted thinking and acting, it is being overlooked that the products of the computer industry are among the technologically most valuable economic goods of modern industrial states, and that their manufacture is carried out by highly

qualified workers using previous work, also of high technological quality (electronic components). The computer industry is neither raw materials- nor energy-intensive and causes no environmental damage, in contrast to many branches of the processing industry, chemical and basic industries. Thus it fulfills the most important prerequisites for a sector of production which is optimally adapted to the conditions of our industrial state and the ecological requirements which are growing worldwide.

The lag in the computer industry vis-a-vis the United States and Japan, gauged by market shares, has been increasing for years. To date, no change in this trend can be noted in any way. And yet, during the eighties and nineties advance decisions will be made on markets for the information, communications, and manufacturing technology of the 21st century. As yet we possess in Europe the preconditions in order to regain the lost ground. However, with half-hearted professions and verbal speciousness the gap can certainly not be narrowed. Steps in the right direction are the measures decided by the Federal Government in March 1984 (concept on promoting the development of microelectronics , and information and communications technology), as well as the Esprit promotion program initiated by the European Community in 1984 (European strategy program for research and development in the field of information technologies). However, they will probably result in nothing more than scientific reproduction of international development. From a financial viewpoint, the funds are insufficient and too one-sidedly aimed at promotion of research.

In addition, from a strategic point of view the leading function of the computer industry is not being taken into account. Under these conditions, and even with these latest measures, the Europeans will hardly be able to wrest any appreciable market shares from the U.S. and Japanese industry potentials which have grown enormously in the meantime.

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SCIENTIFIC AND INDUSTRIAL POLICY

EC FUNDS TO PROMOTE COOPERATION, EXCHANGES AMONG SCIENTISTS

Rijswijk PT AKTUEL in Dutch 31 Oct 84 pp 7-8

/Article by Casper Schuuring: "Europe's Intellectual Capability is Being Wasted on a Large Scale"/

> /Text/ Europe's scientific potential is, at least, just as great as that of the United States, but still Europe is behind in many respects. European research is not qualitatively inferior to Japan's and the budget is even twice as large and still Japanese products, the result of research and development, successfully penetrate the European market. Many are struggling to again get Europe in a leading position for much of what happens elsewhere comes from "European brains."

Attempts are being made in every way to make up for Europe's backwardness in the field of science and technology. That is happening especially in Brussels through the European Commission. It has developed many plans, but in the uneasiness about the EC budget, which is still continuing, many initiatives are not started. Most of them are an extension of previous programs, as in the field of energy. There are also new programs, such as, introducing new technologies in conventional branches of industry (see PT AKTUEL, 10 August 1983).

A completely new program is the one to bring European research workers more in contact with each other and to induce them to cooperate actively. On 6 November, the Council of Ministers will again discuss the budget problems and it looks like those two new programs will start up because of their multidisciplinary approach. That is, at least, the optimistic expectation of Charles White of the Policy Directorate of the General Directorate for Research and Development of the European Commission.

The new program originates in a decision of the Council of Ministers in 1982 to mutually improve mobility and cooperation between research workers in Europe. Scientists often remain in their own country and accordingly work mainly in their own field. In addition, there is a tendency to go to the United States to seek contacts, rather than in Europe. White says, "it could very well be that Europe would not be behind at all, if many European research workers had remained here. We can probably assume that for fields such as the new data technology and biotechnology."

Science is dispersed in Europe, both geographically as well as regards discipline and organization. A traditional mentality mainly prevails. Cooperation between universities and industry, such as that which is under discussion in the United States and Japan, is now beginning to start only occasionally, says White. In the case of interdisciplinary projects, they are still organized frugally, although that is somewhat different on the European level. "However, I still do not see Danes and Greeks working so quickly with each other, if it still involves different disciplines."

After the ministerial decision in Brussels in 1982 an experimental project was set up to stimulate cooperation and exchange of research workers. That took place especially to see how great the interest would be. In 4 months, more than 2,000 responses were received. That resulted in 220 applications for a project for the first part of the experiment and 400 applications for a second part. It entailed a total of just as many different applications, in which 60 million ECUs [European Currency Units] (at 2.50) were involved. However only 7 million ECU were available.

"In a fully operational program, the demand will undoubtedly be greater. We had to deny requests for good projects," says White. In view of these results and recommendations of several member states and of CODEST /Committee for the European Development of Science and Technology/, they have proceeded in Brussels to another fulfillment of "the first multiyear plan for the promotion of cooperation and exchange in the field of science and technology in Europe 1985-1988" (Document COM /expansion unknown/ (84) 46 def.).

It declared that effectiveness of research in Europe was limited because communication between European scientific institutes is mutually faulty, because of a lack of mobility, there is too little variety in forms of cooperation (the projects in it often seem too limited or too restricted to a field) and there is a lack of employment opportunities for young graduate research workers. As regards the latter: the efforts which are made on

the national level, are still extremely limited and "that leads to a sometimes irretrievable waste of intellect," according to the Commission in the document. Supply and demand should be adjusted better to each other by the Community, through a larger scale.

Consequently the advantage of action on that level is recognized, certainly the experimental stage is now being phased out. A distribution of costs and risks among the various countries for undertakings which are to be scheduled, whether difficult or not, offers, moreover, the opportunity of tackling many promising research areas, for which enough manpower or money is not always available on the national level. The latter already appeared during the experiment when the project for the optical computer was handled by 10 institutes in 5 countries. With this much faster type of computer, all operations would be able to take place at the same time, instead of one after another. The project will still continue until the end of 1985, as the experiment has already been in progress for a year.

The new multiyear plan must promote the effectiveness of research through more mobility of research workers in the EC, through more cooperation and by a better linking of training with the working process. It involves herewith the exact and natural sciences, insofar as they are not included under military or industrial secrecy. Mobility would have to be encouraged through scholarships and grants, especially for the costs of assignment to another country (in or outside of the EC) and for the inclusion in a team of a young research worker from another country. The same is true for the training and employment of young research workers in industry, in particular in small and medium size businesses.

Research Worker Card

Mutual visiting of each other--but for periods of at least 6 months or more, if it involves countries outside the EC--must be facilitated. A "research worker card" would be useful in this respect. "It involves bringing our young research workers together, who have something special in mind," says White. The establishment of genuine European scientific data banks, which are available for small and medium size businesses, would at the same time actively promote communication.

Other measures are intended to promote the mutual operation of teams, which want to achieve a definite scientific goal, both in the private sector and at the same time in various countries. In this respect the European Commission wants to create "genuine

networks for cooperation in many fields and subjects. In the sphere of financial grants, four different opportunities are offered, ranging from a period of 2 weeks to 3 years. In this connection, there is also the opportunity for young scientists to finish their education elsewhere.

The European Commission estimates that 90 million ECU must be earmarked for this first plan in 1985-1988. Since it still would be too premature to make this entire amount available at once, 40 million could be appropriated for the first year and a decision could only be made about the rest, if the first part works out well, says White. More money would possibly be necessary after 4 years. With this budget, an average of 250 scholarships, 150 research grants, 3 or 4 broadly organized projects and the additional costs of 500 research workers in "permanent cooperation groups" can be financed. The purpose of it all is to further help bridge the gap between basic and applied science and promote cooperation between the disciplines.

Areas of Research

In the field of applied research, the Community has great opportunities in certain sectors and the lead there must be maintained, according to the Commission. It regards these as spearhead sectors and also CODEST, of which Dr E. de Hahn (former director of Philips National Laboratory) and Prof Dr H. de Waard of FOM /Foundation of Fundamental Research on Matter/ are members and seven research areas. They are chemistry (especially synthetic chemistry, composition materials and monomer chemistry), pharmaco-biology, earth sciences, optics, mathematics and data processing, oceanography, surface physics and chemistry (mainly catalysis, adhesion and surface exchange) and scientific instrumentation.

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SCIENTIFIC AND INDUSTRIAL POLICY

FRG START-UP AID TO HIGH TECH ENTREPRENEURS CATALOGED

Duesseldorf WIRTSCHAFTSWOCHE in German 11 Jan 85 pp 60, 62

[Text] A climate of optimism for new businesses has not only been officially announced--in fact, the Federal Government is ready to open its coffers to entrepreneurs.

The problems small business has coping with federal assistance did not start when the liberal Christian Democrats in Bonn began granting funds to boost innovation. Particularly in high-tech fields, small business has been falling victim to the savvy subsidy-experts of large corporations, who snatch up the best grants federal programs have to offer. Sometimes the little guys drown in the sea of paperwork, or get lost in bureaucratic channels--most often through no fault of their own.

"For many people, it's simply easier to negotiate only with Siemens than to sit down with ten provincial politicians," even a department head in Heinz Riesenhuber's Research Ministry is forced to admit. Moreover, young entrepreneurs have more difficulty than anyone making it through the ordeal of obtaining assistance, even though the Federal Government intended the aid to be of prinicpal benefit to this very group.

Because money still represents one of the biggest obstacles to independence, the government is supporting new undercapitalized entrepreneurs, commercial and professional, with funds made available under the name of "Equity Aid." These funds are extended in the form of long-term, low interest loans and are similar to equity inasmuch as they are fully liable to creditors in case of bankruptcy; thus they serve as capital-proxy loans. No collateral is required. Equity Aid is extended for:

--the startup of an independent primary business;
--the takeover or activation of a proprietorship or corporation; and
--investments connected with the startup of a primary business up to two years after the business has become active (i.e., follow-up investments); in this case, monies may only be granted if Equity Aid was extended for the original startup itself.

Normally, the entrepreneur is supposed to finance 12 percent of the investment with his own funds. With Equity Aid this can grow to maximum 40 percent. Thus

the federal "shot in the arm" can represent up to 28 percent of the amount of the investment. The remaining 60 percent is to be financed by other means, for example, with bank loans or resources from other Federal assistance programs.

A special provision for innovative entrepreneurs: any expenses incurred in the development and fabrication of a prototype, or in acquiring patents or licenses, may apply as a substitute for insufficient personal funds.

But the real strength of the program lies in the payment schedule. The first two years of the loan are interest-free; in the sixth year, interest begins to rise to a contractually agreed-upon level, corresponding to market conditions (see Table). From years 11 to 20 a fixed rate of interest will apply, based on the market rates prevailing in the tenth year. After ten years of debt-service only, (no principal payments), the loan is to be repaid in twenty equal, semi-annual payments.

SOURCES OF FINANCING FOR ENTREPRENEURS
Terms of the Most Important Assistance Programs for Beginning a Business

	Interest Rate (%)	Maximum Amount (DM 1000's)	Term (years)	Payout (%)	Proportion of Financing (%)
ERP Primary Business Startup Program	6.5 / 5.5*	300	10 / 15+	100	50 / 66 2/3#
Supplementary Program I from the Equalization Bank of Burdens (LAB)	6.75	300	10	96	50
Supplementary Program II from the Equalization Bank of Burdens (LAB)	6	200	12	100	100, incl. ERP
Program M I/II from the Credit Union for Reconstruction (KfW)	6.75	5000	10	96	50 / 66 2/3+
Equity Assistance Program	0 - 8.5#	300/350	20	100	28

* = Border territory and Berlin; # = two years interest-free, third year at 2%, fourth year at 3%, fifth year at 5%, sixth to tenth year at 8.0 to 8.5%; + = for businesses with less than 50 million Marks in annual sales.
Table prepared December 17, 1984 Economics Weekly

Next to Equity Aid, the so-called ERP Programs offer the most assistance to entrepreneurs as well as small and medium-size businesses. Except for its contractual conditions, ERP credit differs little from commercial investment credit offered by banks and savings and loans. It is not granted directly by the minister of economy, but rather through one of the three main lending institutions of the ERP Fund--the Credit Administration for Reconstruction, (Frankfurt), the Equalization of Burdens Bank (Bonn), and the Berlin Industrial Bank, Inc (Berlin)--to the commercial bank of the debtor. The latter bank normally accepts liability for the loan, and has secured creditor status against the debtor.

Interest rates for ERP loans are below market, as well. A ceiling is set for the life of each loan, the maximum having been determined by factors such as the purpose for the credit and the borrower's credit rating. The first two years of the loan life are typically debt-service only. As an additional aid, the Equalization of Burdens Bank (LAB) extends its own loans for investment to support new business startup as well as the training of new trade personnel. This option, Supplementary Program I, offers a maximum loan of DM 200,000. For subsequent qualified applicants there is Supplementary Program II, with a maximum loan limit of DM 100,000.

The entrepreneur wishing to set up a business but lacking the collateral required by banks may apply for a guaranty from credit guaranty unions. These are economic self-assistance establishments promoted at the federal and state levels. The guaranties cover up to 80 percent of the loan amount, and may be obtained to protect loans used for financing business/plant startup, takeovers, acquisition of a business interest in other enterprises, or to a limited extent, capital equipment. The individual states offer further startup aid by means of supplementary programs, as do the sources of investment aid with funds drawn from joint federal, state and local initiatives to improve regional economic structures. In most states assistance for technological innovation is offered independently.

A model experiment initiated in 1983 by the Federal Ministry for Research and Technology was specifically intended to promote the establishment of technologically-oriented enterprises (TOU). Increased stimulus was to be extended to newcomers in areas of future promise, as well as additional support for existing enterprises. Services available included consulting, financial assistance for research and development, and the securing of risk capital.

This year Bonn's legislators will be offering a special bonus to anyone establishing a business. As part of a new assistance program, federal options for accumulating equity may be obtained by entrepreneurs seeking to set up a new business. Both parties of the coalition agreed last November to details of the long-promised "Primary Business Savings Program," created to be similar to the state-supported building and loan savings institutions. Once the program has been initiated, an entrepreneur may accordingly sign a savings contract at any credit institution and be assured a bonus on 20 percent of the savings balance annually.

The bonus may only be paid, however, if a new business has indeed been established after a certain period of time. The maximum term of the incentive savings program is ten years, the maximum bonus is DM 10,000. It is thus possible to accumulate a total of DM 60,000 equity under the program.

With all of these measures, the Federal Government is hoping to boost the start-up capital of young entrepreneurs above its modest and often insufficient levels.

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SCIENTIFIC AND INDUSTRIAL POLICY

BRIEFS

FRG INFORMATION TECHNOLOGY FUNDS--Bonn (CW)--The outlay for information technology in the German federal budget for 1985 will be 11.8 million marks less than in the previous year. The German Federal Ministry of Research and Technology (BMFT) explains the drop as a result of expiration of the "Microelectronics Special Program." Actually, if this latter program were excluded from the picture, support for information technology would show an increase of 97.2 million marks. This increased expenditure is said to be a consequence of the FRG's government report on information technology for the period 1984 to 1988. In particular it is planned that in future the resources for joint projects among industry advanced schools and research facilities will be combined and thus yield a more effective application of research results. [Text] [Munich COMPUTERWOCHE in German 30 Nov 84 p 1] 8008

TECHNOLOGY TRANSFER

DUTCH JOURNALIST QUESTIONS WEST'S POLICY ON HIGH-TECH EXPORTS

Implications of Pegard Sale to China

Brussels KNACK in Dutch 9 Jan 85 p 41

[Article by Rik Coolsaet, polemicist associated with the Study and Documentation Center of the Emile Vandervelde Institute, the research service of the SP: "Unknown, Unloved: An Economic Yalta (Part 1)"]

[Text] Was it an accidental leak? Was it intentional? One way or another, the report reached the press: China is going to be allowed to have Pegard's famous machine. You know, the agricultural machinery that is still sitting on a dock somewhere in Antwerp because the Americans did not want the Belgians to sell it to the Soviets. You never know with the Russians: they would no doubt make missiles with it and then aim them at us.

The Soviet Union is communist, after all, and a communist regime is aggressive by nature. Moreover, it represses its people in order to be able to arm itself undisturbed. In the West we think that over there in Moscow they should invest somewhat less in their military technology and somewhat more in their civilian. As long as they do not do so, we simply must not reward that regime by selling our expensive technology to it at a ridiculously low price.

Of course this argument seems simplistic when you set it on paper. Still, it was for these reasons that the Belgian government would not issue an export permit for the Pegard machinery. But beyond that, this reasoning is hypocritical, if the machinery is ultimately going to be supplied to China. China is still a communist country, until further notice, even if it is being written there now that Karl Marx is less infallible than the pope in Rome and even if decentralization is now being proclaimed the new capstone of the Chinese path to economic development.

So Charles de Gaulle is put in the right again: ideology is secondary in international politics. It has nothing to do with a conflict between great social ideals, such as democracy versus dictatorship. It has to do with more prosaic things, such as influence and power. Otherwise, why wouldn't we want to sell to communist Russia what we are willing to sell to the just as communist China?

This new Pegard episode thus forces the question on us: what economic policy to pursue vis-a-vis Eastern Europe?

The West has chosen a policy of close cooperation with China. That country will thus be able to get pretty much everything it asks for. The United States has even sold nuclear and military technology to them--which is absolutely impossible according to the usual COCOM rules. Our intention with this policy is to get Beijing "on our side" by making it dependent on uninterrupted technological, industrial, and thus also political cooperation with the West. In this way China will not have to waste its scarce means on the duplication of technology which is already available in the West. This dependence also means that if China moves in a direction that the West does not approve of, an entire range of contacts and pressures can be applied to make Beijing change its mind.

Rich and Poor

We are doing exactly the opposite with Russia. The West, under the direction of Washington, wants to keep the Russian economic and technological boat as far at bay as possible. The fewer technological exports and the less industrial cooperation, the better for the West, according to Washington. As a result the Soviet Union has no other choice but to pursue as much economic self-sufficiency as possible, coupled with a pervasive economic specialization within CEMA.

In so doing we naturally oblige the countries of central Europe to nestle ever deeper into the embrace of the Soviet economy. The result of this economic Yalta is that the West is denying itself many of the means of playing a role in what happens in Eastern Europe and in the Soviet Union. This economic distance has also caused a rift in political, cultural, and human terms so that the West hardly even realizes what is going on on the other side--and vice versa.

To hinder export for the purpose of provoking economic difficulties in Eastern Europe and the Soviet Union is a threat to the West. Not only does each crisis create an unpredictable and thus unstable situation. What is more, throughout Russian history internal difficulties, when not combined with military defeats, have led to a strong leader rather than to the fall of the regime.

To be sure, the Belgian government now denies that it adheres to this policy. In reality it barely offers resistance to Washington and Pegard is just the top of the iceberg. There are plenty of examples in which the Belgian government has cancelled exports to Eastern Europe for purely political reasons, even when hundreds of people have lost their jobs as a result as in St. Peter's shipyard in Hemiksem.

On the other hand, economic rapprochement can offer considerable economic advantages to an export-oriented country such as ours--and in a crisis period that is a not unpleasant achievement.

There is, after all, a natural complementarity between Eastern and Western Europe: an energy-poor Europe and an energy-rich Siberia; a problematic food situation in the Soviet Union and food surpluses in the EC.

Unknown, unloved. The fewer economic and political contacts between East and West, the more unrealistic and thus more unstable the idea the Europeans have of one another. It may sound a lot like Orwellian "Newspeak", but dependence is independence: greater mutual dependence between Eastern and Western Europe is the springboard to a more independent Western European foreign policy. Those who want to reach the latter must inevitably proceed via the former.

Eastern Europe Suffers Most

Brussels KNACK in Dutch 16 Jan 85 p 42

[Article by Rik Coolsaet: "Are We Better Off Without COCOM? An Economic Yalta (Part 2)"]

[Text] An OECD study is front-page news in this country only when it praises the government's foreign policy. If that is not the case, then it moves at best to the financial pages and usually it doesn't even make it into the paper at all.

In July of last year a study was published by the Organization for Economic Cooperation and Development concerning the export of Western technology to Eastern Europe. In that study two British economists came to the conclusion that the widespread opinion that the Soviet Union is in desperate pursuit of Western technology is based on barely more than a myth. The Soviet Union does not appear to be that "big, stupid monster" that a British historian took Russia for a century ago.

In reality, according to Alec Nove and Stanislav Gomulka, the importation of Western technology and machinery has barely played any role in the post-war economic development of the Soviet Union. The prohibition against the export of some essential products may cause a few problems for Moscow, but only in the short run. In the longer run, Soviet scientists are quite capable of following Western technological developments, interpreting them, and putting them into practice in industry in their own country. In other words, there is little sense in prohibiting the export of Western products since the Soviet Union has long since assimilated the technology that they employ.

However, this is less true for the other countries of Eastern Europe. They do not have at their disposal the immense research and development potential of the Soviet Union. It was primarily they who appealed to the West in the 1970's for machinery and products in order to maintain their economic growth. A successful cocom policy is thus making them its primary (and only) victims and forcing them into technological integration with the Soviet Union. And that, conclude Nove and Gomulka, would not be very popular in Eastern Europe nor very advantageous for the Soviet Union.

Oddly enough their findings have been corroborated by the Atlantic Institute, a sort of propaganda division of the Atlantic alliance headquartered in Paris. A recent note by Gary Bertsch, an American professor from Georgia, also claims that we have to look at our economic relationships with Eastern Europe more realistically.

There is no scientific proof, Bertsch writes, that Western technology has played a decisive role in the economic and military development of the Soviet Union. Those who nonetheless continue to claim that it has do so only on the basis of a generalization from isolated examples. The conclusions that can be drawn from a particular case, however, are not applicable beyond that one case.

Bertsch thus comes to what he himself calls four reasonable conclusions: not much more technology is being exchanged between East and West than between North and South or among Western countries; Western technology has never been decisive in the economic development of the Soviet Union; the most effective barriers against the use of Western technology are the barriers which exist in the Soviet Union itself; it is at least doubtful that Western technology has had a direct impact on the relationship of military power between East and West.

Three Lists

In the face of all these indications, the question arises whether Western Europe wouldn't be better off if it simply did away with cocom. It really isn't yielding anything other than friction among the Atlantic allies and as an economic or military embargo it obviously does not represent much.

Perhaps that is a rather radical suggestion. COCOM works with three lists of prohibited products. There is really no debate on the first two lists: those are military and nuclear products. Therefore, let them be. It is the third cocom list, however, that makes for problems. On that list are civilian products which could ultimately also have a military application. Only there is no single criterion for drawing a line between the two. Every decision here is essentially a political decision--and that is where the problems begin. The United States, for example, labels everything that has a high economic value as strategic and thus of military significance. Some Western European countries do not see it this way and do not accept products being included only to serve to keep economic growth in Eastern Europe in check. The result: endless debates within COCOM.

Up to a point. One of the unwritten cocom rules is that the importation of a Western product may not help to resolve any significant shortage in the country of receipt. If the American grain farmers see their profits declining, then the cocom rule is suddenly no restriction for Washington, either.

Throwing the cocom philosophy overboard might help to solve a lot of problems: the cold-war climate would become more temperate as a result; it would signify support for the reformation-minded wing in Eastern Europe which would like to replace heavy economic centralization with more decentralization, even with certain forms of private enterprise; the standard of living in Eastern Europe could thus improve, which could lead in turn to a more relaxed internal climate in which a stronger bid could be made for individual and political liberties. But none of that will go smoothly: so much has the Popieluszko affair taught us in the meantime.

END

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